

401

# THE BOSTON Medical and Surgical JOURNAL

VOLUME 190

MARCH 6, 1924

NUMBER 10

## The New England Surgical Society

### PERSONAL EXPERIENCE WITH CARCINOMA OF THE STOMACH

BY DAVID CHEEVER, M.D., BOSTON

A WIDESPREAD skepticism as to the curability of carcinoma of the stomach exists among both laity and physicians, which is in most instances soundly based on unfavorable experience. In no other organ so readily accessible to surgical attack and so dispensable, in whole or in part, are the results of surgical treatment so discouraging. As a result of the education of the public in the significance of the common phenomena of disease, instances of cancer which are visible as swellings or masses or ulcerations, or which announce themselves by bleeding or unnatural discharges, or by pain or marked interference with the function of an organ, are brought to the attention of physicians much earlier than formerly; and accordingly, if so situated as to be reasonably open to attack by modern surgical methods, an encouraging percentage of so-called "cures" is obtained. Thus cancer of the breast, of the lip and tongue, and of the uterus, are by no means the hopeless conditions which they were formerly considered to be. In other instances the technical difficulties of removal constitute such an obstacle to successful treatment that little or no progress has been made, as for instance in malignant disease of the oesophagus, of the pancreas and bile ducts and of the prostate. In still other instances, such as tumors of the adrenal, the characteristics of growth and dissemination of the neoplasm make medical cure unlikely. But in the case of carcinoma of the stomach we are dealing with an organ which logically should afford opportunity for a higher percentage of operative cures than any other of the internal organs. It is an organ which has been repeatedly shown to be not essential to the maintenance of a fair degree of health. Many instances of its practically complete removal have been published, and its partial resection is an every-day recurrence. The very fact that its function is frequently so nearly destroyed by disease without occasioning grave symptoms is proof that it may be considered dispensable. Its anatomical situation, visceral relations and blood supply make it possible to resect it surgically with a varying, but often not a serious degree of technical difficulty. Its contents are well known to be relatively free from

pyogenic bacterial flora, which makes surgical infection more easy to guard against than in the case of the colon.

The natural history of carcinoma of the stomach, so far as is known, presents no peculiar features which might render it unfavorable to surgical cure. Beginning, like other instances of carcinoma, as a strictly limited local lesion, it increases by direct invasion of surrounding tissue, and later disseminates itself by invasion of the lymphatic and blood streams, and by the breaking off of small fragments and their subsequent implantation at other points in the stomach itself, or in the free abdominal cavity. As in the case of most other forms of carcinoma, dissemination by the lymphatics is the earliest and most favorable method, while the other three characterize, as a rule, the later stages in the disease, and render its cure hopeless. As in the case of the mammary gland, the first relay of regional lymph nodes, which temporarily arrest the scattering tumor cells, are accessible and removable with the parent tumor. They are situated along the lesser curvature, where the current flows upward toward the cardia, and along the greater curvature between the layers of the gastro-colic omentum, where the stream flows downward and to the right. After a time cells are liberated from or pass through this primary defense, and reach secondary groups of nodes which are retroperitoneal and in relation to the pancreas or to the aorta and its branches; in other instances, their transmission in a normal direction being blocked by the choking of the lymphatic channels, they pass in a retrograde manner through anastomosing lymph vessels and reach the liver, the diaphragm or the abdominal parietes in an indirect manner. So long as the first line of lymph node defense is not broken through, the case is, theoretically, radically operable, because these nodes may be removed with the diseased part of the organ; when the second relay is reached, the case is hopeless.

Invasion of the portal blood stream, with consequent metastases to the liver, constitutes such a striking picture in the advanced case that it is sometimes thought to be a constant feature of the terminal stages of the disease; but the facts are at variance with this view. In 67 patients operated on at the Brigham Hospital the condition of the liver was carefully noted and found to be free from metastases in 77.7 per cent.; nevertheless, the lymphatic dissemination was so advanced in more than one-half of these that no

radical operation could be attempted. Moreover, autopsy records at the same hospital show that among cases not operated on and dying from carcinoma of the stomach, 22.8 per cent. still showed no metastases in the liver. It is clear, then, that early liver involvement cannot be held responsible for the failure to cure by radical operative measures.

It may be granted, then, that we are dealing with an organ situated, anatomically, reasonably favorably for surgical interference, whose physiological function may be compensated for by other organs after its partial or even nearly complete removal, and which, when attacked by carcinoma, continues to be the sole focus for a considerable period. In spite of these hopeful aspects, the results of radical operation are very disappointing. One explanation is furnished by certain figures revealed in a study of 236 cases treated at the Peter Bent Brigham Hospital during the first ten years of its existence. In only 9.7 per cent. of these cases was it possible to attempt a radical operation, yet in over 50 per cent. of cases the duration of symptoms previous to admission was less than six months, indicating that the disease, in the great majority of instances, progressed to a hopeless degree of development without heralding its presence in time to permit of an attempt at surgical removal. Corroborative evidence on this point is afforded by the fact that among 97 cases considered inoperable on admission, no less than 44.8 per cent. lived but one month or less.

Clearly, then, it is the old story of fatal delay in the resort to curative measures, so characteristic of the war on carcinoma wherever situated, but doubly emphasized in the case of an organ which is more frequently attacked by the disease than any other in the body and which furnishes the greatest cancer mortality. The symptomatic latency and insidiousness of carcinoma of the stomach are almost unbelievable, especially in view of the well-known and characteristic promptness with which the stomach gives warning of trouble elsewhere in the economy. The onset of almost any infectious disease, the functional or inflammatory disturbances of other abdominal viscera, traumatism of all sorts, emotional disturbances, diseases of the central nervous system, are all frequently characterized by gastric disturbances, especially anorexia, interference with motility or secretion, nausea and vomiting. The veriest tyro knows enough to look beyond the stomach for the explanation of most of its manifestations of perverted function. Yet when attacked by disease itself it remains silent, availing itself of its margin of excess efficiency, or handing on to the intestinal tract the duties which it can no longer perform. A few case histories may be briefly cited in illustration:

CASE 1: Miss A. S. Med. No. 563, 34 years, single, gave a story of asthenia, loss of weight and dyspnoea

of about four months' duration. Her friends said that she seemed to be "fading away." Two months before admission enlargement of the glands of the neck was noted. Three weeks before admission she was operated on elsewhere for retroversion, and evidently no complaint of gastric symptoms was made, for with the abdomen opened apparently the lesion in the upper abdomen was not found. On admission, lack of appetite was the only complaint referable to the alimentary tract. There was no vomiting before or during her stay in the hospital, but in three weeks she was dead, and autopsy showed an enormous primary carcinoma of the stomach, with metastases to the liver, spleen, adrenals, bone marrow, dura, skull, cervical nodes, lungs—indeed, to almost every organ in the body.

CASE 2: C. L., Med. No. 2716, 58 years, entered complaining of loss of weight and diarrhoea of eight months' duration. There was no vomiting or other gastric symptoms except lack of appetite. Examination showed a palpable mass in the epigastrium; x-ray showed a large pre-pyloric filling defect with 24-hour stasis; gastric analysis showed achlorhydria and blood, the stools showed occult blood. There was marked secondary anemia. He was considered inoperable and died seven weeks after discharge. No autopsy was obtained, but the diagnosis was not open to doubt.

CASE 3: Mrs. C. L., Med. No. 2907, 51 years old, gave a history of only three weeks of symptoms, which consisted of weakness, vomiting, and loss of weight. The patient was too weak to admit of the usual diagnostic measures and, indeed, cancer of the stomach was not suspected. There was a very profound secondary anemia. She died ten days after admission, and autopsy showed extensive scirrhous carcinoma of the stomach, with metastases in lymph nodes and liver.

CASE 4: F. A., Med. No. 10286, 59 years, gave a history of an illness of six weeks, consisting of pain in the right lower chest on respiration, dyspnoea and fever. There was entire absence of gastric symptoms. Examination showed a mass in the epigastrium, an enlarged liver, and a deformity of the stomach by x-ray. The patient was too ill for further diagnostic measures, and died two weeks after admission. Autopsy showed an annular fungating carcinoma of the pars media of the stomach, which had perforated posteriorly and caused pancreatic necrosis and peritonitis. There was an enormous metastatic growth in the liver.

CASE 5: J. C., Surg. No. 1214, 67 years, entered the hospital complaining of increasing constipation for eight weeks, occasional vomiting for six weeks, abdominal pain for three weeks, and loss of weight. Examination showed the usual evidences of advanced carcinoma of the stomach. He lived but seven days after admission, and autopsy showed an extensive obstructing neoplasm, with metastases to the liver and aortic nodes.

CASE 6: Mrs. M. H., Surg. No. 11335, 40 years of age, gave a story on admission of backache, weakness, fever, and rapid loss of strength, covering a period of only five weeks. For one week there had been jaundice. The patient died twelve hours later, and autopsy showed a primary colloid carcinoma of the stomach, with metastases to lymph nodes, liver, lungs, adrenal and dura cerebri.

While the cases cited above are unusual, they may be duplicated from the records of any hospital. They represent the type of case in which the symptoms, whether pointing to the stomach

or not, become evident so late in the disease as to preclude the possibility of successful interference. Far more common are the instances where the symptoms may be spread over a much longer period, but are so vague or of such a character that organic lesion of the stomach is not suspected by either the patient or his physician. In the series of cases above referred to, it appeared that such indeterminate symptoms as weakness and debility, loss of appetite, loss of weight, constipation, pallor and backache constituted the earliest symptoms complained of in more than one quarter of the total number. Such symptoms do not permit of a diagnosis of carcinoma of the stomach, yet that is the stage when the disease must be discovered if a reasonable prospect of cure is to be entertained. As so many clinicians have so aptly said, when the classical picture of the disease is fairly established, it is almost invariably too late for a successful radical operation.

It is not easy to suggest any promising solution for the difficulty in securing early treatment for this disease. So insidious is it that not often is it fair to say that the patient is unobservant of his symptoms, or the physician lax in his methods. Nevertheless, it is probably true that the classical picture of the established case is too firmly fixed in our minds. It is not necessary that the patient shall have epigastric pain or distress, or vomiting with or without blood, or emaciation or a cachectic appearance. In the patient of chronic dyspeptic habit the early symptoms are bound to pass unnoticed. In the person of previously normal digestive function the slightest symptom-complex embracing such complaints as belching, distress or discomfort after eating, loss of appetite, nausea, weakness and debility, pallor, constipation,—if these persist for any length of time,—should occasion the most careful diagnostic measures. A negative routine physical examination means absolutely nothing at this period. By far the most exact diagnostic method is examination by fluoroscope and film after the ingestion of an opaque meal, which experience shows may be expected to give dependable evidence in 97 per cent. of cases of carcinoma of the stomach. To be sure, there will be a small percentage of cases when the x-ray will cause suspicion of a lesion which is not confirmed at exploratory operation, which should be a harmless procedure in such a case. But pitfalls exist in the use of the x-ray by the inexperienced roentgenologist, especially if he does not examine by fluoroscope as well as by film. Too often such a man will fail to see the slight filling defect, or the inconspicuous failure of the peristaltic wave to pass over a small area, on which the diagnosis hinges. It is but natural that once such an examination has been made and pronounced negative, the patient and his physician may rest in fancied security until it is too late.

Elsewhere the experience at the Peter Bent Brigham Hospital has been reported.\* Briefly stated, it shows that among 236 patients whose data were satisfactory, 124, or 52.5 per cent., were found to be inoperable for either exploration, palliation or cure; 24, or 10.1 per cent., were found inoperable for palliation or cure on exploratory operation, whose mortality was 20.8 per cent.; 53, or 22.4 per cent., were afforded palliative operation for obstruction or perforation with a mortality of 13.2 per cent.; and in 23, or 9.7 per cent., a radical resection was done with an immediate mortality of 13 per cent. Of the 20 cases which recovered from the radical operation, but who subsequently died, 4 lived less than 12 months, 6 lived from 12 to 18 months, 2 lived from 2½ to 4 years, and one lived seven years. Seven patients were living at the date of publication, of whom 3, or 13 per cent. of radically operable cases, or 1.2 per cent. of all cases seen, showed 5-year "cures."

The writer's personal experience with the radical operation is limited to 12 cases, of whom 2 died, giving an immediate mortality of 16.6 per cent. Six patients have died of recurrence, having lived an average period of 23 months. One patient is living with recurrence at the end of 23 months. Three patients are alive and well seven years and three months after operation, six years, and six years and three months respectively. Two of these cases have been examined and show no evidence of recurrence; the other could not present herself, but is said to be actively at work. This gives a percentage of six-year apparent cures of 25 per cent.

Such figures are far too few to permit of broad deductions, but at least they afford evidence that carcinoma of the stomach is not so hopeless as the discouraged surgeon is sometimes tempted to believe.

#### DISCUSSION

DR. F. B. LUND, Boston: There are a great many points of interest in Dr. Cheever's paper. What determines whether a cancer of the stomach can be successfully removed or not, is usually whether the stomach with a growth on it can be drawn outside of the abdomen. If this can be done, the operation is usually safe and it may be worth while to do it even if there is a single nodular cancer in the liver. In a recent case in which the stomach with the growth could be easily brought out of the abdomen, but where the liver was filled with nodules, I did not excise the growth because I felt sure that whatever I did, within a few weeks the patient would be deeply jaundiced and death would come soon.

I have had two cases in which the x-ray diagnosis was misleading because of the fact that

\*Cheever, D.: "The Operative Curability of Carcinoma of the Stomach." *Annals of Surgery*, Vol. Lxxviii, No. 3, Sept., 1923.

the position of a large cancerous growth was on the posterior surface of the stomach, and it did not appear in a bismuth x-ray on either the greater or lesser curvature. In one of the cases the growth had existed so long that there was a bone metastasis, and on the day when I first saw the patient she had suffered a pathological fracture of the collar-bone while trying to get up on a bed-pan. Of course, a transverse x-ray might have shown this, but the woman was a very stout woman; also a fluoroscopic examination might have suggested something on account of the interference of peristalsis. The presence of enlarged glands in cases of cancer of the stomach, where the growth can be drawn outside of the abdomen, does not necessarily mean recurrence. In a recent case in which I removed a very large growth, together with a number of glands, there were certain glands which I could not safely get. In this case, the pathologist reported that the excision was well outside the growth and the glands which I did remove showed no metastasis; leaving the inflammatory glands of course does no harm. The thing that is the most likely to cause trouble in these cases is the attempt to remove the growth that extends too far down on the duodenum. It sometimes happens that the end of the duodenum, where you attempt to sew it up, is diseased and will not hold sutures. In these cases, and as I have seen happen, leakage from the end of the duodenum may prove fatal after two or three weeks.

In regard to the operative procedure, I think that cases where the growth is not too extensive, the old Billroth No. 2 takes very little more time than the Polya and leaves the stomach in an ideal condition for drainage. I therefore prefer it. Where one has to remove as much as two-thirds of the stomach, the Polya operation is necessary because the stomach does not come down in apposition with the fourth portion of the duodenum. The danger of obstruction of the loop from the dropping down of the mesogastrium can be avoided by bringing the loop up in front of the colon. I think it is a very good plan to close up part of the large opening of the stomach in doing a Polya, leaving an opening the size of the normal duodenum in the upper part. This is not a surgical operation in which one should adhere to any stereotyped method, but choose the method best adapted to the particular case.

DR. P. E. TRUESDALE, Fall River: About three years ago I looked up our records on cancer of the stomach and they approached 200 cases examined. We found 65 who presented enough on the bright side of the picture to warrant operation. Of this number, 30 were found to be inoperable when the abdomen was opened. Inoperability was determined by the extensiveness of the stomach involvement and by the

glandular, peritoneal, or visceral metastasis. Two died as a result of the interference.

Of the remaining 35, 18 were obviously incurable when the disease was exposed to view, but a palliative gastroenterostomy was done to offset existing obstruction. There were four deaths.

The average length of life after this operation was eight months. The best one can report for these cases is that they improved for a few weeks or months, then remained unchanged for an equal length of time, and died from extension of the disease, not from starvation.

Partial gastrectomy was done in 17 cases. There was only one death from this type of radical operation. Mortality 6 per cent. These were the most favorable cases for operation.

The majority showed a palpable tumor on examination. In many instances it could not be determined at the time of operation whether the mass was benign or malignant. Only two are alive and apparently well, one eleven years after operation, and the other only nine months after operation. One lived seven years after operation, two lived more than three years, one lived two and one-half years, six lived between one year and one year and a half.

Two more cases should have been included in this series. In each the clinical diagnosis was ulcer, the operative diagnosis was ulcer and the pathological diagnosis was ulcer. Yet both patients died of cancer in the upper abdomen. One lived more than three years and the other lived seven years. The remaining four could not be traced. So that, it seems fair to report that of nineteen cases after radical operation the operative mortality was  $5\frac{1}{2}$  per cent. Three lived more than five years, and six lived more than three years.

The radical operation is ambitious surgery. The choice of case for the operation governs the risk. The mortality can be made high easily, but if the end-results are no better on the average than in this series of nineteen cases, I see no wisdom in operating on the more advanced cases.

DR. ERNEST A. WELLS, Hartford: I would like to say one word on the matter of technique. In 1921 at the fall meeting of the College of Surgeons, Professor Schoemaker, of The Hague, called attention to a special clamp which he had devised and used. A year ago last summer I had occasion to see him use this clamp in a case in which he did a gastrectomy for extensive cancer of the stomach. I do not know whether the men here today have used that clamp or not, but it has certain mechanical advantages. In the first place it is made so that it can be used with a concavity toward the lesser curvature which allows one to excise a relatively larger proportion of the lesser curvature of the stomach and still preserve a large part of the greater curvature. He does a Billroth No.



1. He does it very skillfully, and easily, and when he gets through it is surprising how much what remains is like a normal stomach. The special clamp that I speak of is made in two parts, as you will remember. After the section is made, one of these parts is removed, which allows a running suture to be very easily placed. The whole clamp is then removed and this first suture turned in with a running Lambert stitch. I commend this method of Professor Schoemaker's to your consideration if you have not used it, and suggest that you look up his very short description of his method, which you will find in *Surgery, Gynecology and Obstetrics* for December, 1921.

DR. DAVID CHEEVER, Boston (closing): Very favorable reports are coming from the Rochester Clinic of cures of carcinoma of the stomach. I remember Dr. C. A. Porter asking me if I ever saw any cures of cancer of the stomach, and since then I have noticed other men's statistics and have found that they, like Dr. Truesdale's, are about the same.

I would like to ask Dr. Porter how many cases of cancer of the stomach he has that are living?

DR. C. A. PORTER: None.

DR. CHEEVER: Two or three points have been brought out—Dr. Lund brought out clearly his experience with roentgen diagnosis. The case that Dr. Lund described escapes the roentgenologist who isn't experienced, and this type is a source of real danger (drawing diagram). It is unfortunate that those cases are not diagnosed by an experienced x-ray manipulator because it soon becomes too late to operate successfully. In this case (diagram) the x-ray may not show the filling defect, but if the patient were turned sidewise, it might appear; but there ought to be failure of the peristaltic wave, and that wouldn't get by an experienced man. The majority of the cases of carcinoma of the stomach which are missed are those which are up here at the cardia.

There is another peculiar thing for which I have no explanation to offer, and that is, in spite of the large number of routine gastro-intestinal x-ray examinations we almost never accidentally find carcinoma of the stomach; it seems perfectly extraordinary; but one would say that the number of cancers found in that way is far less than the known incidence of carcinoma in the community at large. I have hardly ever seen a case of carcinoma of the stomach turn up in routine examination where carcinoma wasn't at least suspected.

The statistics from the Rochester Clinic are important. Two or three years ago Dr. Balfour made an interesting report on life expectancy of cases operated on for gastric and duodenal ulcer and he showed that cases operated upon for duodenal ulcer had a life expectancy equal to that of the corresponding age group of the

community at large, while the life expectancy in cases of gastric ulcer was only one-third as long as that of a group of average individuals of the same age. He recently reported that in this examination he had been struck by the fact that so many cases of gastric ulcer operated upon had later died of gastric cancer, and thereupon he went over the sections of the specimens removed for ulcer and found on reexamination more critically that they showed carcinoma. So I think there is positive proof from the Rochester Clinic of the difficulty and uncertainty of microscopic diagnosis, and they, of course, would be the first to acknowledge that the diagnosis of cancer may sometimes have been made when the case was ulcer.

In reviewing my technique, I believe that I am not doing as extensive an operation as I should. I am obsessed by the idea that the stomach is an essential organ, and while I am removing the lesser curvature, gastric carcinoma practically never goes beyond the pylorus; but I am afraid I am trying to preserve too much of this part of the stomach (showing), and it seems to me I ought to do a more elaborate thing, something like the Schoemaker method, sacrificing a great deal more of that part of the stomach; but when cases turn up, they are usually so unfavorable that one does not have a chance to; for instance, since making a report on the cases at the Brigham Hospital last June,—I have been on duty three months,—I have not seen a single operable case.

DR. F. B. LUND, Boston: I have had two cases like that on the posterior surface, and the first one came in and was examined by one of our best roentgenologists who didn't get on to it, and the other case was examined, and they concluded the x-rays were all right and that it was a case of cancer of the colon. It isn't always due to inexperience that they miss them.

DR. CHEEVER: Dr. Lund says the films were good, but it is often the fluoroscope that gives the diagnosis.

DR. LUND: To be sure.

#### WHAT THE REGULAR PROFESSION OF MEDICINE HAS DONE

VOLTAIRE's gibe that "Doctors were men who crammed medicine, about which they knew little, into bodies about which they knew less, to cure diseases about which they knew nothing," has received the attention of Dr. Frank Crane, who needs no introduction. He proves to the contrary. In brief, he says that regular physicians have done, and are doing more for the human race than all the cults, fads, quacks and pathies put together; which is true, and shows how surgery, sanitation and education has lowered the death rate from 19.6 in 1908 to 13.1 in 1920.—*Buffalo Sanitary Bulletin*.

# RÉSUMÉ OF CASES OF SUPPURATIVE APPENDICITIS AT CAPE COD HOSPITAL\*

BY GEORGE H. GRAY, M.D., F.A.C.S., HYANNIS, MASS.

This paper briefly covers the experience of the first two years of appendicitis at the Cape Cod Hospital—Service of Dr. G. H. Gray and Dr. P. P. Hemson.

All probably fully appreciate that it is of vital importance to a newly established hospital that the early results be unusually good. When it is understood that our hospital was opened in October, after the summer people (who were used to hospitals) had left, it does not seem strange that work started slowly.

The first cases were emergencies and for the most part have since been; and I am convinced will so continue. This is as it should be, in my opinion. Chronic cases and those showing unusual difficulties in diagnosis should be referred to the metropolitan hospitals, where clinical facilities and special skill and experience are to be had.

Up to October of this year, we have had 82 operated cases of acute appendicitis and four, so called, chronics.

Of the chronics, two had normal appendices and no discoverable abdominal pathology. Final diagnoses of psychoneurosis were made. These both were greatly benefited by their operations and became ardent boosters for the hospital. I am convinced that appendectomy is justifiable treatment for some cases of mental appendicitis. Don't blame the patients. They invariably have been told by two or three medical men that they have chronic appendicitis.

The other two cases showed some appendical deformity, with spider-web adhesions which may have and probably did cause functional disability of the cecum and terminal ileum.

Of the 82 cases, 45 were uncomplicated, had clean cavities and showed no pathology, outside the appendix itself. The right rectus incision was made in the great majority of cases. (In all cases where we were not sure of the diagnosis.) A few McBurney's were done, the cases being limited to young men, boys and girls under maturity, having no previous histories.

The writer has a personal predilection for McBurney's, because of very gratifying experiences in his own case.

We slipped on one, however; had to close the incision and make a right rectus, because we found a large cocoon appendix in the pelvis. Had we examined this by the rectum, we should have avoided this dilemma. Too much stress cannot be placed on rectal examination. The location of the infecting focus should determine the method of approach. McBurney cases, if properly selected, should be up on the fifth day and ready to leave the hospital on the eighth, or

shortly after. They should take moderate exercise early, because the muscle pull tends to tighten the opening and limit scar tissue.

All these cases were closed in layers and made rapid recoveries, with one exception. This case will be given in some detail.

We use chromic catgut for the deep layers; No. 0-plain catgut continuous for the skin, and we place three or four silkworm gut stay sutures, which include skin, fat, outerlayer of deep fascia, and are tied over a folded sponge, wrung out in alcohol. This, for two reasons. The writer remembers seeing one case in which the deep layers parted under excessive strain from vomiting—a loop of bowel was forced through, strangulated, and the patient died. This was only discovered too late. The second reason was found in the army service. Too many suture infections were occurring; dressings wouldn't stay in place, even when carefully strapped. The boys liked the hospital better than duty. After this method was adopted, they couldn't prove an alibi and the stitch infections ceased.

THE CASE: M. S., aged 6, brought in with a temperature of 99.6; pulse 80. Had vomited several times; had a great deal of colicky pain and exquisite tenderness in right iliac fossa, with muscular spasm. The appendix was swollen and red and quite a little free, odorless serum was present. For this reason a cigarette drain was placed. (This case was properly a clean case and shouldn't have been drained, in my opinion.) From the first he suffered an undue amount of spasmodic pain and too much local tenderness. In spite of this his temperature and pulse held good until the twelfth day. The drain was removed on the eighth day, with no relief, but rather steady increase of pain, constant nausea, retaining nothing by the stomach. This was not my case at the time. On the twelfth day, his temperature suddenly shot to 102. Pulse (which had been 80 to 90) to 140. *Appearance:* Pinched and drawn, wasted, and looked as though he was going to pass out. I had seen him about every day, making rounds, and had concluded he had intestinal obstruction. As a last resort, I reopened the belly, found the terminal ileum and cecum tied up with extensive plastic exudate, and coils of small intestines greatly distended with gas and fluid. The cecum and ileum were straight out, stuck on loops of intestines, freed, and an ileostomy done. He had a pretty stormy time for a few days. Stomach washings and hypodermoclysis were done; 5 per cent. glucose given per rectum and plenty of morphia and hot stupes. Five days later his temperature and pulse reached proper limits and he was convalescent. Left hospital on the thirty-eighth day with a small sinus. No intestinal leak and symptom-free. He remains so at the end of fourth month.

## COMPLICATED CASES—37

These cases, clinically and pathologically, fell into four groups.

- |                          |   |
|--------------------------|---|
| 1st: Localized-necrotic. | The completely shut in types, covered with a cocoon of omentum or thick fibrin. Necrotic and purulent inside. |
| 12 Cases.                |   |
| 2nd: Ruptured.           | With general cavity contamination.  |
| 10 Cases.                |   |
| 3rd: Ruptured:           | With suppuration and varying amounts of peritonitis.  |
| 14 Cases.                |   |
| 4th: Ruptured.           | With large amounts of pus and general peritonitis.  |
| 1 Case.                  |   |

\*Read by Frederic J. Cotton, M.D., Boston.

The classification clearly explains the pathology in these cases.

All of this group were operated within eighteen hours of admission—most of them immediately, many during the night. Several were diagnosed as acute abdomens and median incisions were made.

*Clinical Pictures: Group 1—12 Cases.*—The first group were mostly males, in middle life or older. They did not look or act very ill, although some had moderately high temperatures and pulses, and leucocytosis. What they did have was pain and tenderness, aggravated by motion; and they had these symptoms for some days. They had little or no nausea and vomiting; and their bowels functioned without pain, if the trouble was to the outside, below or behind the cecum. If it was in front or behind the terminal ileum or in the pelvis, sticking up coils of small intestines, peristalsis did cause pain, and usually nausea and vomiting. Most of them gave a history of previous attacks and soreness in their sides, off and on. All had a palpable tender mass and no tenderness elsewhere. All of these cases could be operated leisurely, and every care taken to prevent general cavity contamination.

*Incision; Inside Technique:* We endeavored to make our incisions so that we could get into the free cavity. If we were fortunate in this, we proceeded to place a gauze coffer-dam, shutting off the general cavity completely if possible. This coffer-dam is the last thing to be taken out before closing. The diseased structures are then dealt with in a manner determined by the varied positions of the infected mass. Hemostasis is quite a problem in some of these cases. Owing to the necrotic condition of the tissues, ligatures often cut through. Again, inaccessibility plays a part. Packing will control most cases of bleeding, but it is better to leave a dry cavity. We have not hesitated to leave on hemostats and pack around them in bad cases. After the infected cavity is cleansed of all debris, perhaps disinfected with a chlorine solution or alcohol, depending on the oozing, it is packed with iodoform gauze. The cecum and terminal ileum are displaced inward and upward. This usually leaves a spheroidal cavity, except in pelvic cases. Accessory infected areas are drained by rather large rubber covered iodoform wicks, coming out through the main pack, so that they may be removed early with no disturbance of the main pack itself. In bad cases the cigarette wicks are shortened a little each day.

Cases will drain until all necrotic substances are out. Chronic catgut ligatures are often not absorbed in these cases. Five of these cases showed no pus at subsequent dressings, and all comparatively little.

*P. O. Treatment:* The after-care of these cases is extremely simple, if the patients are in fairly good general health. Complications should be few and convalescence rapid.

*Ruptured. General Cavity Contamination: Group 2—10 Cases.*—These occur most often in the young. They are usually of sudden, violent onset, and rapidly progressive.

*Symptoms:* Great abdominal pain, probably chill, high fever, nausea and vomiting, and constipation, if not given castor oil or Epsom salts by the family on first complaint of pain, as are most of our cases.

No physie should be given to abdominal cases until infection of cavity is absolutely ruled out.

*Signs:* They lie with legs drawn up and don't wish to be moved or touched. Their bellies are distended, spastic, sensitive all over, tender in the right lower quadrant. They wouldn't let one feel a mass, if it were there.

These cases were operated as soon as we could get ready.

*Technique:* Right rectus incisions of good size. Much gauze wrung out of salt solution, as dry as possible, carefully introduced into belly to get in its work, while appendix is being removed.

These cases usually show a swollen, red appendix, with small necrotic, leaking areas. They are usually easily located by touch and lifted out. They should not be pulled out by tugging on the bowel.

*Drainage:* We use a large cigarette drain to the bottom of the pelvis, taking care that the drain rests on the lateral pelvic wall and comes out below, rather than on top the caput coli. Patients are put to bed in full Fowler's position and kept there for some days.

*Ruptured Cases with Suppuration and Varying Amounts of Peritonitis: Group 3—14 Cases.*

*Symptoms:* These cases follow the preceding group; have probably passed through that stage; have been ill longer; have gotten over their acute pain, because active peristalsis has ceased. Some of them are vomiting at intervals or will, if anything is taken into the stomach, or they are much disturbed. But there is a decided lull in the symptoms, for a varying period. This should be ominous. A few years ago a patient, seen in consultation during this period, died five days later of general peritonitis. Temperatures may be low, but the pulse is usually too high in proportion.

I think there is something characteristic in the look of these patients. Experienced clinicians often spot them on sight, but a very careful physical examination is never neglected. They are usually very thirsty.—children often continuously calling for water, in spite of the fact that it does not stay down long. The vomiting is more like regurgitation and, if peritonitis involves a considerable area, material thrown up will be intestinal. Respiration is increased in frequency, as in Group 2, but now distention, rather than pain, limits diaphragmatic excursion. This picture pretty nearly spells general peritonitis, and some of this group were mighty close to it.

However, we think all these cases should be operated immediately, morphia and atropine administered beforehand, and hypodermoclysis during the operation in the more severe cases.

**Findings:** Much pus in these cases, hence a good-sized right rectus incision. Usually one comes directly into it and the odor fills the operating room. If it does not, so much the worse. The intestinal coils are distended, more or less agglutinated, and dusky red in color in severe cases.

**Technique:** First, hot gauze packs, as in Group 2. The appendix is often hard to locate and harder to get out. It may be advisable not to try, although we have thus far succeeded. The appendix is usually gangrenous and occasionally separated from the bowel. Usually the ligature will cut through, if tightly tied. No time should be wasted in fine surgery. Reliance must be placed on drainage and after-care. We used two, occasionally three, cigarettes, again filling the right iliac fossa with iodoform gauze, as in Group 1.

*Ruptured with General Peritonitis: Group 4*  
—1 Case.—Drainage seems to furnish never-ending discussion.

I learned to use iodoform gauze from Pryor, sometime in the nineties, and have used it ever since, with the exception of a short time when it seemed to be unpopular. I never could see the reason for sticking clean gauze into a dirty hole, and leaving it. Nature is trying to throw out toxins and bacteria; hence, the exudates. Local irritation favors this, but it must be borne in mind that we are dealing with gluey material, more or less diluted, and glue sets on exposure to air, unless impregnated with some hydroscopic. If I had to give up iodoform I would use gauze impregnated with salt. I would try to keep up exosmosis. Mechanical drains (tubes—rubber dam) have their uses, but they only offer a way out; they don't pull any. In my opinion the iodoform gauze, properly placed, does pull and favors localization. Deep-seated abscesses may have to have tubes, because of the impossibility of replacing the gauze, and a cigarette does nothing after the first. Our iodoform drains usually come out looking and smelling pretty clean and, if the cavity contains no sloughs or foreign bodies, like ligatures that won't soften; they close quickly.

Post-operative treatment is extremely important and must be individual and not routine.

First and foremost: Physical and mental comfort must be established. Use sufficient morphia and beware of physis.

Fowler's position is important in all cases of infection of the lower abdomen.

Abstinence from food for 24-36, or more, hours, is important.

Plenty of water, from the first, some way or other, is important. Gas enemata.

The stomach tube always handy.

Careful watching for gastric dilatation or ileus. Ileostomy, if necessary.

Hot fomentations, where there is great plastic exudate.

No chest complications of upper abdomen abscesses occurred in these cases. All recovered.

#### DISCUSSION

DR. FREDERIC J. COTTON, Boston: That is 82 cases in a country hospital in a country community—82 cases and not one death.

DR. WILLIAM H. BRADFORD, Portland: We have had the pleasure of listening to a valuable paper by Dr. Gray on a subject with which we are all familiar. Much more, of course, can be said on suppurative appendicitis than has been said by Dr. Gray, but my remarks will be limited to a short discussion of a very few points. I will first speak of the temperature. We think of mild acute appendicitis as of short duration, the abdominal pain subsiding after a few hours, the patient then finding a localized sensitive area in the right lower quadrant, the temperature, at first usually slightly elevated, quickly returning to normal, and if left alone in a few days all symptoms have disappeared. If temperature continues and is found to be present at the end of the second or during the third day and the local symptoms persist one can feel reasonably certain that suppuration has occurred and an immediate operation and drainage are necessary.

The next point of which I will briefly speak is drainage. It seems very important to place whatever material is used for drainage next to the outer wall of abdomen and pelvis if that cavity is to be drained, preventing as much as possible, contact of intestines with drains, thereby avoiding post-operative obstruction, which unfortunate complication occurs most often from adhesions of knuckles of intestine along the track of drainage.

A point, not mentioned in Dr. Gray's paper, of particular interest to me and on which I would like to hear some discussion is infection of the abdominal wound, resulting as it occasionally does, in extensive sloughing of the fascia, delayed convalescence and a weak wall which may later develop hernia difficult to cure by subsequent operation. How can this complication following operations on suppurative appendicitis be avoided?

DR. JOHN M. ALLEN, St. Johnsbury, Vt.: Dr. Cotton has read in this paper of Dr. Gray's of 82 cases, 37 of which were complicated, but all recovered. A remarkable record and good proof of the practicality of the man who wrote it. It seems to me that the percentage of pus cases here and elsewhere constitutes an indictment of the diagnostic ability of the men who refer these late cases to the operator; to the



same extent as in the watchful waiting policy in referring cancer cases to radiologists and surgeons and which was covered so well in Dr. Simmons' paper of yesterday. To those of us who practice surgery in the northern one-third of New England, suppurative appendicitis is perhaps a matter of more concern than to you of the larger communities. Until within the past few years many of us frequently had to do kitchen surgery, going to a farm house many miles away, taking a nurse, getting the kitchen ready for an operating room, operating, and many times leaving the patient with a man who was not at all skilled in the after-care of this class of patients. In these cases the matter of drainage was and still is of great importance. In my locality the customary method of drainage has been the introduction of two soft rubber tubes, one simply fistulaed and the other fenestrated, and using one-quarter strength Dakin's solution for injection every few hours. We do not have access to laboratories and rely upon the commercial preparations of near-Dakin's as supplied by drug houses. I consider it important to move the bowels early, and this is done within the first 24 hours with simple aloin pills, a.c.c. of pituitrin and a high enema, believing that we have less complications in the way of mechanical obstruction if bowels are moved early. I know this is not the rule in many places, but we do it up that way. Another thing which I have found of benefit is the use of the many-tailed binder where the patient has shown marked peritonitis. I am certain that this binder applied high upon the ribs and pinned snugly down over the iliac crests gives a marked measure of comfort in keeping the distention evenly restrained and not allowing the upper abdomen to be overcrowded with gas in the colon. Suturing we do pretty much as elsewhere but for some years I have used linen sutures boiled in paraffine for the stay sutures, tied over a strip of gauze. The stitch removes very easily and stitch abscesses are rare with its use. One more point—I noticed a few days ago in an article in the *Journal of the American Medical Association* the writer, in speaking of the number of patients who undergo operation for chronic appendicitis and get no relief from the symptoms, stated that in this class of patients at present and for some time back, he had been careful to cut the little folds which often are found connecting the cecum and terminal ileum, turning the edges in and covering all raw surface, and that his patients were no longer presenting themselves with these unpleasant symptoms following his operations.

DR. P. E. TRUESDALE, Fall River: However clearly and well Dr. Cotton has read this paper, I am sorry the author isn't here. In his absence one can say anything he wishes. Dr. Gray will go down in history as the pioneer surgeon of Cape Cod; certainly he is a unique figure in

that part of Massachusetts, and the manner in which his paper is put together leads one to understand that the author is a surgeon who exercises common sense in everything he does. I have no doubt that some of you have gone down to the Cape Cod Hospital and seen cases with Dr. Gray and his associates. If you have you will agree with me that the visitor always finds history and examinations most complete. No detail of importance in the study of cases is omitted.

No deaths in a series of 80 cases of appendicitis, most of them acute and suppurative, is an enviable record. However, I have found that these natives of Cape Cod are pretty hard to kill. We haven't had such good fortune as Dr. Gray, but we have had a very low mortality among surgical patients who come from territory adjacent to the sea. Not all are natives, but those who are almost invariably live to be old people. They live out of doors much of the time and endure hardships well. Hence their resistance to disease is strong and they are well fortified to withstand the tempest incident to surgical procedures.

In reply to the question which Dr. Bradford has asked concerning the prevention of infections extending between the layers of the abdominal wall adjacent to the abdominal incision after operation for suppurative appendicitis, I might say that it has been my custom to use alcohol in the abdominal wound just before opening the peritoneum. If we feel that drainage is to be needed it is our custom to take a sponge saturated in alcohol and put it in the wound for a short period. Whether that blocks off the lymphatics or not I do not know, but I believe that it prevents infection of the layers of the abdominal wall adjacent to the wound.

DR. JOHN M. BIRNIE, Springfield: If you start talking technique in appendicitis, you can go as far as you please. Every man has a different way of doing the operation, and one way may fail with one man and not with another. I think it doesn't make a great deal of difference what you do if you remove the pathology without trauma and provide relief of tension.

I have seen practically every kind of suture material used and have used them myself. I have seen the wound sutured every way and all kinds of drainage materials used. If you remove your pathology with as little trauma as possible and provide some relief to tension, you will be successful.

I have read in the literature of right inguinal herniae following a McBurney incision and I have seen several cases, so for that reason I haven't used a McBurney incision for many years.

I was brought up to use glass tube drainage but I find I get better results by taking a piece of rubber glove and then putting that down to the base of the appendix.

My experience is like that of Dr. Allen. Some years ago they opened up a country hospital 30 miles from Springfield and I went out there to do acute cases. Those men were excellent men, but they had no experience in the after-care of surgical patients. The conditions were such that I had to leave the after-care to those gentlemen. So I used this technique of leaving one bit of rubber tissue, ordering enemata as needed, pull out the rubber tissue on the fifth day and give them morphia if necessary; and I have had excellent results.

In regard to Dr. Bradford's question about keeping the wound clean, there is one possibility which we use with seeming success, and that is clean out the wound as much as possible and sew up tight and put your drainage through a separate stab wound.

One thing I have been impressed with in appendix cases, as I look back, and that is we don't seem to have as many complications as we used to have—I mean surgeons in general. We used to have subphrenic abscesses and obstructions on the ninth day and secondary pockets, but we don't see many of those cases nowadays.

DR. ————: A number of surgeons in my particular vicinity are not inverting the stump of the appendix at the present time. I stood out strongly for that and I wonder what is the feeling of the gentlemen here in regard to that.

DR. JOHN M. BIRNIE, Springfield: I would like to answer that. It doesn't make any difference what you do. You can turn it in, put in a purse string, or leave it alone, or touch the end with carbolic acid and alcohol or with alcohol alone—anything you want.

DR. FRANK H. LAHEY, Boston: There are animal experiments in connection with this. If you take a section of an animal's bowel and tie aluminum tags in a section and put the animal in a metabolism cage, you will get every piece of aluminum in the feces. In other words, every tie is turned in. For instance, if you turn in an appendix and you look at it later, it is turned in. If you tie a string around the pylorus, the string is delivered into the intestinal tract. Therefore, unless there is definite infection which may produce early adhesions to the terminal ileum, the tie will turn itself in.

DR. F. B. LUND, Boston: I never thought appendicitis would be lugged out again; but one thing hasn't been mentioned which I have found useful,—when the mesentery has been thickened and cut off and every tie cuts through it, there is one thing that is helpful. Take a pledget of gauze and dip it in hydrogen peroxide and put it on for 15 seconds and then take it out, and it is perfectly dry and the bleeding stops, and that has been useful a great many times.

DR. GEORGE R. ANDERSON, Brattleboro, Vt.: I haven't anything to say except that I think the greater part of the battle is keeping the patients quiet after the operation and giving them morphine to keep them comfortable.

End of discussion. Meeting closed.

Adjournment.

### Original Articles

#### OBSERVATIONS ON INFANTILE ECZEMA\*

BY HAROLD C. STUART, M. D., BOSTON

IN spite of the large amount of work that has been done on infantile eczema during the past ten years, and the very definite advance that has been made in our knowledge of this disease, we can only speak with certainty of a few isolated facts pertaining to its etiology, and there is still much diversity of opinion regarding its fundamental nature. Eczema is a difficult disease to observe under conditions of adequate control because its course is so extremely variable, there are so many possible related factors and it occurs at an age when radical experimentation with diets is fraught with such dangers. As a result, innumerable theories have been expressed as to the etiology of eczema, each with series of cases which are thought to demonstrate its validity, and yet many of them seemingly contradictory.

It is my purpose to review the theories which have been offered and to consider what factors can be accepted as of probable importance, and how these apparently unrelated factors may be fitted together into a workable hypothesis which, whether correct or incorrect, will at least lead to therapy of the most serviceable nature.

The earliest controversy was over the local or metabolic nature of the disease. It is now generally agreed, however, that whereas local factors tremendously influence the course of eczema, underlying abnormalities in metabolism are present and must be dealt with to secure permanent improvement. If we dismiss the local factors briefly it is not because we minimize their importance, but because they are generally recognized and allow of no controversy. They are, in general, the avoidance of local irritation in any form, particularly the use of restraint to avoid scratching, and the use of healing applications, notably crude coal tar. It is of interest that the importance of restraint was first impressed upon the profession in 1881 by White, former Professor of Dermatology at Harvard, and the appropriate use of crude coal tar has been developed by his son, who is the present

\*Read before the New England Pediatric Society, Boston, Dec. 14, 1923.

Professor. These local measures may in themselves completely relieve the skin manifestations but usually must be continued to avoid recurrence. Their effect might be compared with that of adrenalin in asthma. We must, therefore, consider other factors possibly more closely related to underlying causes. Recently x-ray and ultra-violet light have been used in treatment, and favorable reports have been published. I have seen cases given light treatment for an accompanying rickets and improve quite satisfactorily, but these have been too few to warrant any conclusions.

It is generally admitted that nutrition does influence the course of infantile eczema, but there is less agreement as to the important factors. Acids, fats, carbohydrates, salts and water have all individually been held responsible, and have been strictly limited in the diets prescribed. We cannot discuss these theories at length, but would simply point out a few characteristics common to many of the diets which seem to bring about improvement.

1. *Moderate or under-nutrition.*—Most infants with eczema are overweight and have been overfed. Simple reduction to a point of stationary or loss of weight will usually produce improvement, no matter what elements of the diet are reduced. This probably explains many of the improvements brought about by reducing the fat in the well-balanced diet, for the results are usually unsatisfactory if the calories are kept constant by the substitution of sugar. But under-nutrition cannot be persisted in, and the eczema usually returns when sufficient calories are given to produce an adequate gain. This method should certainly not be attempted in already malnourished infants. Gerstley has observed that some of these cases definitely improve when the nutrition is improved.

2. *Small total quantity and infrequent feedings.*—Because of fear of the use of one or another element of the normal diet, infants with eczema are frequently put on very weak mixtures, and as a result the quantity must be made excessive to satisfy the infant or to avoid weight loss. The severe, moist eczema seen on such frequent and large feedings will often materially improve on simple reduction in fluid intake and lengthening of the feeding intervals. This may simply be due to the resulting rest afforded the gastro-intestinal tract, but some more complicated change in the fluid content of the tissues is suggested.

3. *Well-balanced and non-irritating feedings.*—Any food which directly causes gastro-intestinal irritation may aggravate an existing eczema. Under this head would come reduction of fats or carbohydrates when they have been excessive or when an intolerance to them is shown by the clinical course. Under such circumstances one is amply justified in reducing the offending food element to a minimum until a tolerance has been reestablished. But the rou-

tine change from a normal diet to a skimmed-milk mixture, without specific indications, should be condemned; for an attempt to maintain nutrition on such a formula is apt to result in the use of poorly balanced formulas and excessive amounts, and in the end one has to deal not only with eczema but with gastro-intestinal and nutritional disturbances.

From these considerations we may conclude that the etiological agent producing infantile eczema is least effective under conditions of minimal skin and minimal gastro-intestinal irritation.

Some twenty years ago Czerney recognized a type in which eczema most commonly occurred. The family history of eczema, the enlargement of superficial lymph nodes, and a number of other well-known manifestations occurring in an infant with eczema formed a syndrome which he called the "inflammatory exudative diathesis." His most interesting observation was that these cases did not do well on animal milk. Just as more recent knowledge concerning blood chemistry in tetany has made us talk and think less of the spasmophilic diathesis, so has our recent knowledge of allergy made us talk less of the exudative diathesis. But there is the predisposition to the development of an abnormal state which might be termed a diathesis, and more recent findings, as will be shown, have emphasized the rôle of animal milk.

A by-product of Czerney's theory has been the study of the effect of the glands of internal secretion upon eczema, but from the literature one cannot discover that any definite relationship has thus far been established.

In 1916 Blackfan published the first comprehensive series of cases tested cutaneously with proteins of various food substances, and showed the striking frequency of "positives" in eczema as opposed to the absence of "positives" in normal infants. He also pointed out the other factors suggestive of allergy, namely, family history, association of eczema with asthma, and eosinophilia. This new lead offered most promising results if applied therapeutically, and as a result much work was done which confirmed Blackfan's original paper very strikingly.

Unfortunately, much superficial work followed and men unfamiliar with the whole subject of allergy, particularly with the reading of tests, started treating eczema on the basis of these readings to the exclusion of much previously acquired and valuable knowledge. Breast-fed infants were found to be disturbed by the spinach protein in the mother's milk because the mother had had spinach in her diet, and spinach protein caused erythema on a single test. Improvement after five or six weeks on a spinach-free diet was offered as clinical confirmation.

I cannot discuss the reading of skin tests in this paper. But where a single protein is causing an eczema, and this protein is removed from the diet, itching subsides and the acute lesions

clear within three to five days. At the end of a week the only remaining evidences of eczema are a dry, rough and thickened skin and possibly scabs from former scratches. We, therefore, cannot accept, as evidence of etiology, improvement five or six weeks after eliminating a protein.

It has been stated that Czerney originally concluded that animal milk was a bad food for infants with the exudative diathesis. Schloss and other workers subsequently confirmed the rapid improvement in eczema usually occurring on diets free from milk protein, but were unable to devise such a diet which proved safe for continual use. Reduction of milk protein to a minimum, either with use of cream or high sugar-starch mixtures or certain proprietary foods such as Nestle's Food, in which much of the protein is vegetable and little animal in origin, is a more conservative method, but likewise meets with much less striking results. Not infrequently a case seems to do better on lactic acid milk than on fresh milk,—an effect which may be either secondary to an improved gastro-intestinal digestion, or due to some change in the nature of the protein. To be entirely effective, elimination of a protein must usually be complete; but this should not deter one from trying as strict limitation as is consistent with satisfactory nutrition, and this would seem to be the method of choice at the present time.

Very little is known as yet regarding the nature of the disturbance in milk metabolism which gives rise to eczema. A majority of the cases give negative skin reactions to milk proteins. Originally, Blackfan was unable to demonstrate precipitins to cow's milk protein in cases showing sensitization to cow's milk. Anderson and Schloss have more recently been studying the serum of infants with chronic nutritional disturbances with an improved method of demonstrating precipitins to cow's milk. By this method Anderson tested the serum of a few of my cases of eczema, and found precipitins present. It is now well known that although whole proteins are not normally absorbed as such in the gastro-intestinal tract, they are at times so absorbed in certain conditions, and these unpublished experiments of Anderson suggest that one of these conditions is infantile eczema. We may conclude that the effect of milk is due to some condition closely related to allergy, but are not as yet justified in assuming that it is the same phenomenon.

Whether the substitution of goat's milk for cow's milk will relieve an infantile eczema can only be determined with certainty by a short trial of goat's milk feedings, although previous skin tests with the individual milk proteins may indicate whether such a trial is logical. The great majority of cases reacting to one milk protein will react in varying degree to all, and clinically such cases show little improvement

on goat's milk. Wells has shown the close antigenic relationship between cow casein and goat casein. One does occasionally, however, see brilliant clinical results from the shift to goat's milk; and such a change should be tried in cases giving only a cow lactalbumin skin reaction.

The explanation of infantile eczema occurring in strictly breast-fed infants seems as yet far from apparent. I, for one, have never been impressed with the theory that foreign protein in the breast milk of mothers is the cause of eczema. I have never been able to get results by elimination of such proteins under conditions of control, and I have shown that foreign protein cannot be demonstrated in breast milk by our most delicate tests, even after giving enormous amounts of such a highly protein food as egg white. In the treatment of these cases one is almost entirely limited to the regulation of breast feeding, particularly reduction of quantity and frequency, and the judicious use of local treatment. The very gradual and early introduction of cow's milk and cereal foods to which skin tests have proved negative is to be recommended to determine the individual infant's reaction to these foods. But the rapid weaning of an infant on the theory that there is something wrong with the breast milk usually results in a very marked exacerbation of the eczema. This procedure is still attempted far too commonly. In fact, most infants who develop eczema on the breast have already been weaned before they reach our special clinic, and most of them date a marked exacerbation from the time of this change. The maintenance of a supply of breast milk during a period in which cow's milk can be introduced very gradually is sometimes of great importance.

A word should be said in regard to desensitization in cases showing specific idiosyncrasy to an important food substance such as egg white or cow's milk. That desensitization can be accomplished by proper oral administration in most cases is generally conceded. The effect of such treatment in the course of eczema is more difficult to determine positively because of the time element, but I agree with most observers that results are often gratifying.

#### SUMMARY

The etiological agent producing infantile eczema is apparently least effective under conditions of minimal skin and minimal gastro-intestinal irritation. A specific foreign protein may occasionally be demonstrated clinically to be the primary etiological agent, and an associated allergy may be shown by skin tests; the eczema and allergy being so closely related as to suggest part of the same process. But in a still larger group of cases, there are indications of a detrimental effect of animal milk, without skin confirmation of allergy. We may speculate at will as to whether protein produces



eczema through its abnormal presence in the blood stream or by producing a type of allergic reaction, or through some influence of its end-products. In any event, rational therapy today adds to the previously considered measures of value the following general procedures:

(1) Complete elimination of any protein to which allergy is demonstrated when this is possible, and reduction to the minimum consistent with health when impossible.

(2) In the infant, where milk is involved, trying the milk of another animal, or much reduced milk protein or some altered milk.

(3) Treating by oral desensitization cases sensitized to egg white or milk or other important protein substances.

(4) In cases showing no evidence of protein sensitization giving a diet very low in animal protein and without preponderance of any one protein, as originally recommended by Blackfan.

(5) Using skin tests just as any other laboratory method as a guide to diagnosis and therapy; remembering that the method of trial and error in infant feeding is a very dangerous procedure and that many changes of diet may sometimes be avoided by the intelligent use of skin tests.

Local treatment alone may relieve many cases of eczema; the added general regulation and control of diet may succeed in many others, but the residual more severe and stubborn cases surely deserve careful study from the standpoint of specific protein relationships.

I am not in a position to state the possibilities of x-ray and other recently advocated methods of therapy, but I am of the opinion that future progress in the control of this disease will be along the lines suggested by further studies of protein metabolism and individual idiosyncrasy.

270 Commonwealth Avenue.

#### BIBLIOGRAPHY

- White, J. C.: Some of the Causes of Infantile Eczema and the Importance of Restraint in its Treatment. 1881.  
White, J. C.: BOSTON MED. AND SURG. JOUR., 1918, clxxviii, 5.  
MacDonald, W. J.: BOSTON MED. AND SURG. JOUR., 1923, clxxxix, 926.  
Bryant, J.: BOSTON MED. AND SURG. JOUR., 1918, clxxx, 394.  
Gerslley, J. R.: J. A. M. A., 1923, lxxx, 1141.  
Cerny, A.: Jahrb. f. Kinderh., 1905, lxi.  
Monatsch. f. Kinderh., 1907, vi, 5.  
Blackfan, K. D.: Am. J. Dis. Child., 1916, xi, 441.  
Schloss, O. M.: Am. J. Dis. Child., 1920, xix, 433.  
Anderson, A., and Schloss, O. M.: Am. J. Dis. Child., 1923, xxvi, 451.  
Schloss, O. M., and Worthen, T. W.: Am. J. Dis. Child., 1918, xi, 342.  
Wells, H. G.: Jour. Infect. Dis., 1911, ix, 147.  
Stuart, H. C.: Am. J. Dis. Child., 1923, xiv, 135.

**PREVENTABLE ILLNESSES.**—It is estimated that there are three million persons ill all the time in the United States, and that 42 per cent. of this illness is preventable. The average loss per year from illness among workers in the industries was seven days in 1923. This is nearly half the average two decades ago.

## ECZEMA IN THE EXCLUSIVELY BREAST-FED BABY\*

BY EDWARD S. O'KEEFE, M.D., BOSTON

[From the Children's Medical Service of the Massachusetts General Hospital]

It seems fairly well established that a large proportion of the cases of eczema in older children is due to protein sensitivity. Such sensitivity is more difficult to prove in the nursing. The few attempts made to demonstrate this in the laboratory have been contradictory. There are, however, clinical observations which seem sufficiently well authenticated to allow us to say that protein sensitivity is a very probable etiological factor in the eczema of the exclusively breast-fed infant.

The general impression has been that food in the mother's dietary could upset the nursing only indirectly, viz.: by upsetting the mother. The first mention of the possibility of a specific food of the mother's diet resulting in an eczema occurs in an article by Talbot<sup>1</sup> in which he mentions an exclusively breast-fed baby which twice developed an eczema following chocolate in excess in the maternal diet. The eczema disappeared when chocolate was omitted from the mother's diet. No cutaneous tests were reported in this case.

Blackfan<sup>2</sup> mentions three breast-fed infants with eczema in whom positive cutaneous reactions were found for egg white, human milk and cow's milk.

In a paper upon eczema in infants I<sup>3</sup> reported in 1920 six cases of exclusively breast-fed infants who showed positive cutaneous reactions to proteins which they had no history of ever having ingested. In this article it was noted that such findings suggest that foreign proteins may pass from the mother in her breast milk in sufficient quantities to result in sensitization of the infant.

Later the author<sup>4</sup> collected data of forty-one consecutive cases of eczema in exclusively breast-fed infants, which showed positive reactions in sixty-one per cent. of the cases to one or more of the proteins used. Egg or milk proteins gave a positive test in every one of these positive cases. The cereals gave positive tests in a much smaller per cent. of the series. Twenty-three similar cases, more recently observed, did not substantially alter these figures. The entire 64 cases show approximately 60% with a positive cutaneous test for foreign protein. All of the tests were made by the cutaneous method and are in striking contrast to the results found in series in which allergic conditions do not exist. In such a group—viz.: of non-allergic conditions—Blackfan<sup>2</sup> found 43 cases negative to the proteins used by the cutaneous method. His

\*Read before the Combined Meeting of the New England Pediatric Society, Philadelphia Pediatric Society and the Pediatric Section of the New York Academy of Medicine.

results were also negative in a group of patients showing skin conditions other than eczema. Other workers report a small percentage of positive protein tests in patients without allergic history. In view of these facts, the great frequency of positive tests for foreign proteins in the exclusively breast-fed infant with eczema seemed to be explainable only by assuming the presence of such proteins in the breast milk.

To demonstrate this, Shannon,<sup>8</sup> in 1921, undertook a series of anaphylactic experiments. Breast milk was collected from a woman on an egg-free diet. This did not prove capable of sensitizing guinea-pigs to egg by the intrathecal or the intraperitoneal route. Egg was then added to this woman's diet and her breast milk did produce anaphylactic symptoms when injected intrathecally in a guinea-pig which had been sensitized to egg white. Several other experiments of a similar nature were performed, as a result of which Shannon concluded that egg protein is present in breast milk at least in some nursing women. Using the same clinical observations as a basis for his work, Stuart<sup>7</sup> was unable to demonstrate foreign protein in any of the breast milk which he examined.

There is, however, clinical evidence to support such findings. We have, first, the very high percentage of positive cutaneous tests among exclusively breast-fed infants with eczema—tests positive to proteins which the patient has no history of ever having ingested. Such positive tests occur among those having eczema in a much greater proportion than among infants not afflicted with what is presumably an allergic condition.

That a positive cutaneous test is not without significance is shown by work of Schloss and Worthen.<sup>9</sup> These workers used Abderhalden's technic for the determination of protective proteolytic ferments in infants' sera. They found in several cases a serum capable of digesting egg protein, although the infants in question had never eaten egg. They commented at that time upon the fact that this was very difficult to explain.

They also reported finding, among fourteen infants with eczema, that the sera of 8 were capable of digesting egg protein. Of these eight infants, four gave a cutaneous test for egg. Each of these four cases having a positive cutaneous test for egg showed a corresponding proteolytic ferment. The negative cutaneous tests in the remaining four cases, which also showed the presence of a proteolytic ferment, indicate that a negative cutaneous test for a given protein does not rule out the presence of such a corresponding proteolytic ferment in the serum, viz.: it does not rule out the possibility of a protein sensitization.

This view receives clinical support in those cases which show undoubted allergic manifestations following the ingestion of protein which has repeatedly given negative cutaneous tests.

Two such instances were reported in detail by the author<sup>2</sup> recently.

The presence of a positive cutaneous test for foreign protein in the exclusively breast-fed baby seems to be explainable only on the presumption that such a protein, at some time, has been present in the breast milk in sufficient quantities to produce a corresponding proteolytic ferment in the infant's serum.

With this idea in mind, it seemed reasonable to suppose that removal, from the maternal diet, of the protein to which the infant's skin responded, would be sufficient to result in disappearance of the eczema. Such a method was applied by the author in a series of eczema among the exclusively breast fed. An analysis of the results of treatment showed that 35% of a small series were relieved entirely of their eczema within one and two-thirds months. This was not strikingly different from what might occur in those receiving external treatment alone. Moreover, there remained a substantial number which did not seem to be influenced by omitting the apparently offending protein from the mother's diet. In several cases eggs were removed, and milk as well, for limited periods, without influencing the eczema.

In this connection it was noted, among older children, that the reaction for a protein often remained positive for months after the given protein had been eliminated from the child's diet. So in the breast fed, it has appeared that positive protein tests may or may not be of significance as far as the existing eczema is concerned. Such positive tests in many instances have only a historic significance. They are an indication of the presence of proteolytic ferments produced in the early days of nursing in response to foreign proteins which entered the infant's circulation. Such an entry may be presumed to be due either to an excess of such proteins in the mother's milk in the early days of lactation or to the great permeability of the intestine of the infant in the early days of life, as pointed out by Schloss.<sup>10</sup>

Such cases as those noted above suggest the possibility of the infants being sensitive to some protein to which the skin usually does not give a positive test, either some protein of the mother's diet or the protein of human milk.

The question arises as to whether or not the breast-fed infant may be sensitized to the proteins of human milk. Blackfan<sup>11</sup> reported ten cases showing a positive cutaneous test to human milk. Others also have reported similar positive findings.

From this it seems fair to conclude, bearing in mind the significance of positive cutaneous reactions, that such sensitiveness can occur in some cases. The majority of breast-fed eczemas, however, shows a negative test to human milk. Does this preclude the possibility of sensitiveness to this protein?

A consideration of the infants who have ec-

zema when on an exclusive cow's milk diet throws some light on this question. Here we have only one food which can be the etiologic factor. It is the general experience that regulation of the amounts, dilution, etc., of this food influences the eczema, and it is clinically established that the infant is sensitized to the milk protein in these cases.

What support in such cases is given to the other clinical evidence by cutaneous tests? I tabulated thirty cases of eczema in the exclusively bottle-fed infant and found that only four of these responded to cow's milk proteins. In other words, here we have a series of cases which are definitely placed by clinical findings as suffering from an allergic condition, yet only about 13% responded to a cutaneous test with the presumable etiologic factors.

By analogy may we not conclude that the small percentage of positive tests to human milk does not preclude the possibility of eczema in the breast-fed infant being due to sensitivity to human milk protein?

It is generally recognized that weaning will only exceptionally be of benefit in an eczema. This might be accepted as evidence that the condition is due to previous sensitization to cow's milk protein occurring in the breast milk. It may, however, be viewed as clinical support of the experimental work of Wells and Osborne,<sup>11</sup> which indicated that the specificity of the anaphylactic reaction is determined by the chemical structure of the reacting proteins rather than by their biological character.

I have had an opportunity to observe four cases of eczema in the breast fed in which the skin manifestations were not influenced by weaning to cow's milk nor later by the transition to goat's milk. In these cases there was no remission of the disease even for a time sufficient to allow for a theoretical sensitization to the new food.

Since goat's milk is not an article of diet in common use, and had never been taken by the mother, in these particular cases, sensitization through the maternal milk cannot be presumed and only the assumption of a group sensitivity would seem to explain the phenomenon.

Such group relationship among the various milks has been noted in experimental work by Moro,<sup>12</sup> Gengou,<sup>13</sup> Fleischer,<sup>14</sup> and others.

To summarize:

The evidence at hand seems to indicate that eczema in the breast fed is an allergic condition; That it is in some cases due in part at least to foreign proteins in breast milk;

That the assumption of foreign proteins in breast milk is not in itself sufficient to account for eczema in the breast fed;

That sensitivity to the proteins of human milk would account for many of the phenomena observed in the breast-fed eczemas;

That group sensitivity will explain many of the features which appear upon weaning.

483 Beacon Street.

# REFERENCES

- 1 Talbot, F. B.: Med. Clin. of N. Am., 1, p. 994, 1917-18.
- 2 S. S. Blackfan, K. D.: Am. Jour. Dis. Child., 11, p. 448, 1918.
- 3 O'Keefe, E. S.: Boston Med. and Surg. Jour., 183, No. 30, p. 569, Nov., 1920.
- 4 O'Keefe, E. S.: Boston Med. and Surg. Jour., 185, 194, Aug., 1921.
- 5 Shannon, W. R.: Am. Jour. Dis. Child., Vol. 22, p. 222, Sept., 1921.
- 6 Stuart, H. C.: Am. Jour. Dis. Child., 25, pp. 135-36, Feb. 22.
- 7 Schloss and Worthen: Am. Jour. Dis. Child., 11, 257, 1918.
- 8 O'Keefe, E. S.: Jour. A. M. A., Vol. 80, p. 1120, Apr., 1922.
- 9 Schloss, O. M.: Am. Jour. Dis. Child., 21, 211, March, 1922.
- 10 Wells and Osborne: Jour. Infect. Dis., 12, 248, 1913.
- 11 Moro: Wien. Klin. Wchnschr., 1901, 14, p. 1072.
- 12 Gengou: Ann. de l'Inst. Pasteur, 1902, 18, p. 754.
- 14 Fleischer: Rousky Wratch, 1908, 7, p. 1638.

## Book Review

*A Treatise on Orthopaedic Surgery.* By ROYAL WHITMAN, M.D., M.R.C.S., F.A.C.S., Surgeon to the Hospital for Ruptured and Crippled; Consulting Orthopaedic Surgeon to the Hospital of St. John's Guild, to St. Agnes's Hospital for Crippled and Atypical Children, White Plains, to the New York Home for Destitute Crippled Children, to the Darrah Home for Crippled Children, and to the New York State Board of Health, etc., etc. Seventh edition, thoroughly revised. Illustrated with 877 engravings. Philadelphia and New York: Lea and Febiger. 1923.

The seventh edition of Whitman's standard work on Orthopaedic Surgery has all the merit of former editions and contains much new material. The author considers that orthopaedic surgery is concerned with bodily mechanics, with the prevention and correction of deformity, and with the conservation of the locomotive function. Among the new matter is included in full the Outline of the Treatment of Fractures which was agreed upon by a conference of surgeons of large experience held under the auspices of the Fracture Service at the Massachusetts General Hospital in April, 1922. Whitman's method of treatment of intracapsular fractures of the upper end of the femur and his technique of astraglectomy are carefully outlined. A description of the author's so-called reconstruction operation for old lesions of the hip joint appears for the first time in this edition. The technique of many operations is well illustrated. The concluding chapter in the sixth edition, entitled "Military Orthopaedics," is replaced by a still fuller chapter, entitled "Collateral Orthopaedics." This book is a valuable reference and text-book more inclusive than former editions and reporting recent advances in our knowledge of the diseases and lesions of the locomotive system.

## Case Records

of the

## Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN  
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.

F. M. PAINTER, ASSISTANT EDITOR

## CASE 10101

An American veterinary of sixty-seven entered December 17 complaining of aching pain in the left side and hip and sharp pain on motion in both sides and flanks. It was hard to obtain a history because of the patient's slow thought and difficulty in rallying his memory.

F. H. Good, except that his first wife died of tuberculosis.

*Habits.* Good.

P. H. He had the usual diseases of childhood. Ten years before admission, upon returning from California, he had three chills in two weeks; nothing afterward. He believed he took some quinine. He had occasional palpitation. For two years his memory had been somewhat impaired. Lately his hand shook a little. He had had a little blood in stools from "a touch of piles," the last one four weeks ago.

Board of Health. The diagnosis was "a common boil." While this was healing the patient found that on rising to a sitting position in bed he had pain on the right side as though the muscles over the lower ribs on this side were being over-stretched. This became progressively worse until he could not turn or sit up. There was only slight tenderness on pressure. In a few days the pain gradually left the right side and became increasingly noticeable over the lower left chest, then gradually passed down the left side to the hip. The whole attack lasted about three months. The pain was sharp, stabbing, and present only on motion. It awoke him at night when he attempted to move, but was only very slight on deep breathing. There were days of remission. He had occasional nycturia and dizziness. The three months' attack was followed by duller pain which made the circuit of his body like the sharp pain, but stopped at the left hip, then passed to the right hip, then back to the left and down the left leg. At admission he had pain only from the left hip to the foot, dull while he was quiet and only a little worse on motion. He also had some sharp pain on bending from the spine to the top of the ilium. He remembered also some pain in the right shoulder joint which lasted only a few days, then passed to the lower right chest. Five months ago he had lost twenty pounds in four months. During the five months he had almost regained this.

P. E. An obese elderly man with red cheeks with many dilated venules. Teeth very poor. Marked pyorrhea. Cervical glands slightly enlarged. Slight tremor of tongue. Lower spine



Figure 1.

P. I. At twenty-four he had pulmonary tuberculosis and was given a bad prognosis. After three years in the woods he recovered. Since that time he had had only occasional colds with muscular pains such as occur with influenza, and an especially severe attack of influenza at sixty-two. He considered himself quite rugged until the March before admission. Then he had pain in the left leg four or five inches above the ankle joint. This spot broke down into a perforating ulcer going almost through the leg and discharging a little pus. In ten days this healed. A specimen was examined by a State

not flexible; not tender. *Lung* signs as shown in the diagram. Apex impulse of the heart not recorded. Percussion measurements as shown in Figure 1. Loud A<sub>1</sub>. A systolic murmur heard at the base. Pulses normal. Artery walls palpable and tortuous. B.P. 190/100 December 20, 24 and 27. *Abdomen* somewhat distended, tympanitic. Examination unsatisfactory because of obesity.

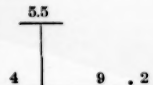


Figure 2.—Measurements by percussion.



**Extremities.** On attempt to extend knee with thigh flexed there was pain referred to lower lumbar spine, more marked on the left side. Some tenderness along sciatic nerve on the left. No pain on lateral compression of pelvis. Fine tremor of fingers. **Genitals normal.** **Rectal examination.** Prostate seemed enlarged to the left, firm but not tender. Fluid obtained with moderate ease. Smith stain showed a small number of pus cells and a few Gram-positive cocci. **Pupils normal.** **Reflexes.** Knee-jerks more marked on the left, lively on both sides. No clonus or Babinski.

T. 97°-99.2°, with a terminal rise to 104.6° by rectum. P. 60-100, with a terminal rise to 120. R. normal except for a terminal rise to 38. **Urine.** Normal amount. Sp. gr. 1.010-1.030. Cloudy at two of five examinations, including a catheter specimen, a slight trace to a trace of albumin at all five, leucocytes at all, red blood corpuscles at one. **Renal function** 50%. **Blood.** Hgb. 60%-75%, leucocytes 5,500-14,000, polynuclears 81%-61%, reds 2,800,000-3,440,000, achromia, microcytosis, considerable variation in size and shape, some polychromatophilia; a rare fragmented or tailed cell at one examination, 5% reticulated cells at two others, one nucleated red at another. **Platelets normal.** **Wassermann negative.** **Non-protein nitrogen** December 2 46.8 mgm., December 26 41.1 mgm. **Blood uric acid** 2.88 mgm. **Serum dilution** 1:10. **Hematocrit** about 30%. **Gastric analysis.** **Fasting contents.** 14 c.c. of white turbid fluid. No free HCl. Total acid 15. **Guaiac** positive. 1-3 leucocytes and 10-15 red blood corpuscles per high power field. **Test meal** in one hour. 15 c.c. of slightly yellowish turbid fluid. No free HCl. Total acid 9. **Stools.** **Guaiac** strongly positive at five of eleven examinations. **X-rays.** **December 20.** The aortic shadow was very tortuous, suggesting arteriosclerosis. Stomach normal. Duodenal cap well filled. Slight delay in emptying of first portion, but its position normal. No tenderness over it. Ileum and cecum not remarkable. Appendix not seen. No tenderness over this region. . . Heart shadow enlarged in the region of the left ventricle. See Figure 3. Supracardiac shadow

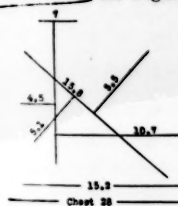


Figure 3.—Measurements by X-ray.

gins of the vertebrae. Ribs also showed a marked degree of decalcification. . . Right frontal sinus and both antra unusually small. No

definite evidence of disease. . . Teeth showed evidence of pyorrhea. Questionable absorption around the root of one bicuspids. **December 24.** Plates of the pelvis confirmed the previous observations. Marked bone atrophy. Spine showed hypertrophic changes. Plates of the shoulders showed proliferative changes at the acromioclavicular articulation, more marked on the left than on the right. **December 29.** In plates of the urinary tract the outline of the left kidney was visible, the right not made out. No abnormal shadows. Mottled appearance of the spine more marked than in the previous examination. **Consultants.** **Genito-Urinary.** Prostate feels about normal for a man of this age. **Throat,** **December 26.** Chronic follicular tonsillitis. Pus in right nares, possibly sinusitis. Infection in mouth. **Orthopedic.** Spine with marked limitation in motion. "I should feel that pain complained of can be accounted for by hypertrophic spondylitis. Hips are good. Heberden's nodes definite. There is no treatment indicated unless pain becomes more acute. Patient should be followed in Out-Patient Department." **Throat,** **December 28.** Right antrum lavaged. No pus. **Dental.** "Pyorrhea exists, otherwise teeth are normal."

**Orders.** **December 17.** Aspirin gr. xv every four hours. **December 24.** Aspirin gr. xx every four hours. **December 30.** Digitalis gr. iss t.i.d. Alkaline gargle every three hours. **January 1.** Morphia gr. 1/6 s.c., repeat once if necessary. Adrenalin minims 10 s.c. Caffein sodium salicylate gr. x intramuscularly.

It was thought that some cells in the blood smear resembled those seen in pernicious anemia, but that there was not sufficient evidence on which to make the diagnosis.

**December 24** there was pain in the joints, especially along the dorsal lower intercostal nerves distribution, much worse on motion. **December 25** catheterization for residual gave only 5 c.c. **December 30** the patient seemed a little dyspneic. There were râles at both bases. The liver edge was palpable but not tender.

That night the patient seemed a little cloudy mentally. He became slightly delirious. After a dose of morphia he apparently fell asleep. Next morning he was perspiring profusely and could not be roused. The heart and lungs were as before. The blood pressure was 190/100. The pupils were small but not pinpoint. After dilatation with homatropin the fundi and discs were found to be normal except for arteriosclerosis. All the tendon reflexes were present, but very slight, and equal on both sides. There were no evident paralyses. The umbilical reflexes were not obtained. There was marked Kernig on both sides, but no stiff neck and no other pathological reflexes. The leucocyte count was 8,500. Lumbar puncture, 3-4 lumbar space, gave 10 c.c. of slightly yellowish fluid; pressure and hy-

drodynamics normal; 280 old crenated red blood corpuscles, 6 leucocytes; Wassermann and globulin normal, gold solution 0011111000, alcohol slightly positive; total protein 74, sugar .099; two cultures negative, one showed staphylococcus aureus. A catheter specimen of urine was not remarkable. An electrocardiogram showed nothing significant.

The patient went into deeper coma, and died that day.

### DISCUSSION

BY DR. RICHARD C. CABOT

#### NOTES ON THE HISTORY

I think it is worth while commenting once more on the common defect in our records of saying "left side" when we do not know whether the left side of the chest or of the abdomen is meant. Here the meaning is pretty plain from the words that accompany the phrase, but often it is not.

There is not much that I can get from this history. Of course this is the patient's statement and nobody's trained observation about the ulcer "going almost through the leg." If it discharged only a little pus that does not seem probable, and the statement that it healed within ten days is further evidence against it.

I am very much in the dark in beginning physical examination. We can imagine a tumor or a collection of pus deep in the region of the kidney on the left side which might exert pressure so as to give pain low down. But there has also been pain on the right side and in so many other places that I cannot make any guess that is worth making. One notes that this is pain on motion, so that one tends to connect it with the joints or muscles; but that does not help very much.

#### NOTES ON THE PHYSICAL EXAMINATION

At his age a spine which is not flexible does not mean anything in particular.

This is a rather wide heart, though as we do not know the diameter of his chest that does not give us so very much information. I wonder, Dr. Means, whether you would consider it worth while, in our physical examinations where we record the transverse cardiac diameter, to take a caliper measurement of the chest, as the x-ray people do, so as to get something comparable with theirs.

DR. MEANS: I do not think one cm. from mid-clavicular line means anything. It is just measured by the eye. I think the nipple is better than nothing, but there should be some landmarks to show distinctly what one cm. means in a given patient. We used to use the nipple, but that seems to have dropped out.

DR. CABOT: These measurements do not help us much unless we have some measurement for the whole chest. A man of sixty-seven ordinarily has a pretty wide chest, so that this fifteen cm. is not necessarily half of it. Of course we have to remember that in any caliper measurement we have the thickness of the chest wall and the fat to reckon, whereas the x-ray people do not.

DR. MEANS: I should think we could get down to the bone with the calipers.

DR. FREMONT-SMITH: At the Good Samaritan we have taken this caliper measurement in all our children, and we find that there is a constant difference of about one cm. between the x-ray and our measurements.

DR. CABOT: Exactly. The x-ray people have stuck to this for a long while. It seems to mean something to them, and if it does for them, why not for us? It seems to me we might make a great reform in our records beginning in the year 1924. All of this examination points to a more or less hypertrophied heart such as one often sees in a patient of his age, associated with arteriosclerosis but without valve lesion. It probably has nothing to do with this case.

There is a spot of amphoric breathing in the left front which would be more significant if it were not right over the bronchus. I guess that it does not mean anything. Behind we have crackles and diminished resonance, such as would go with a high diaphragm or with slight edema of the bases. Again I do not believe it helps us much in relation to this case, which does not sound like a thoracic case.

So far in this examination the only very significant things we have are (1) this difficulty in extending the knee with the thigh flexed (which of course we have in everybody to some extent, but which seems to be greater than usual in this patient), and (2) the pain over the sciatic nerve.

The temperature was essentially normal until we got to the end.

I cannot draw any conclusions of importance from the renal function. It is certainly perfectly consistent with normal kidneys. And as to the urinary tract, at his age I have seen just as bad a sediment as that here in cases shown to be perfectly normal from one end to the other of the urinary tract.

There is marked secondary anemia, running true enough to type, and nothing else in the blood. That it seems to me is the most important fact we have had yet except the local points about the left leg.

There is very little increase in the blood nitrogen, not enough to mean anything to me.

Why did we get that hematocrit 30 per cent. here?

DR. MEANS: That is a slight reduction in the proportion of cells to plasma; about 40:60 is the percentage in a normal person. So that he has fewer total cells than the normal person; it

fits into the picture of secondary anemia above. The cells are spun down into one end of the tube, and we measure the relation of the volume of plasma to the volume of cells.

DR. CABOT: Is there any difficulty about measuring where the end of the column comes?

DR. MEANS: None at all; the cells pack right down and give a sharp line. We can run several tests on the same blood and get good checks.

DR. CABOT: The essential thing in the gastric analysis is the absence of free acidity, which comes of course in many conditions other than cancer, but should always make us consider gastric cancer.

He was said to have had piles. Nothing is said about them in the rectal examination, so we need not pay much attention to the guaiac tests.

There is a long x-ray study. I am afraid we have no x-ray expert here to decipher the plates for us, so we shall have to look at them ourselves. The first shows the unusually big aortic knob to which they call attention, and clear lungs. The plate is hazy because of movements. There is nothing else that I can say about it. Of course what we are interested in is the question of malignant disease, and I am sorry there is no one here who can interpret these better than I.

AN INTERNE: They thought the last x-ray of the spine was more suggestive of metastatic malignancy than the first examination.

DR. CABOT: Here is a plate of the spine which to me would convey nothing abnormal. They are going over the other bones looking for metastasis, I take it, and on the whole not finding it.

From this x-ray examination I get no definite information other than what we have already had. I take it it all centres about the question, Is there malignancy or isn't there?

MISS PAINTER: Dr. Holmes said of the last plate that it is more suggestive of malignant disease now than of simple bone atrophy.

DR. CABOT: Bone atrophy we often see in an extremity when it has been long at rest. It is sometimes so extreme that I have seen a wrong diagnosis of tuberculosis made on an ankle merely because it had been in plaster of Paris so long. But I have never heard it commented on in relation to the pelvic bones, so I know nothing in particular about that.

Of course no one would say there is enough infection in his mouth to account for the rest of his trouble.

They evidently had no idea whatever that he was going to die.

They apparently got into his antrum somehow—probably took out a tooth—and washed it out.

The orders are for pain.

We have had no complaint of heart or lungs before December 30.

At his age and in his condition we cannot make a great deal of the tendon reflexes.

Lumbar puncture was done on the basis of the Kernig and the unconsciousness. The gold solution is not characteristic of anything particular that I know. The sugar is high: .045-.065 is the average. I have seen readings like this in encephalitis cases. But I do not suppose anyone would think of this as encephalitis. I should not.

#### DIFFERENTIAL DIAGNOSIS

This is a blind case. I do not believe they knew what was the matter *intra vitam*, and I know that I don't. But it seems to me it ought to be something in or near the pelvis. The symptoms have centered there from the beginning. Although he died in coma I do not believe the nervous system had anything to do with it. I do not believe his respiratory tract had anything to do with it. I do not believe his genito-urinary tract had anything to do with it.

He might, of course, have a hydronephroma with bone metastases which could perfectly well be silent and give no signs on such examination as we have made. The gastro-intestinal tract has been pretty well gone over. What is left? The bones obviously. We have the great advantage over the orthopedic and other consultants in knowing that he died. What could he have died of if it was not malignant disease? I cannot see. There is no evidence of any infection or of any uremia. I do not believe any lesion of the central nervous system could do it. So that I do not see but that it has to be malignant disease.

Where it starts I have no idea. It does not seem to me at all likely that it started in the bones, but from what Dr. Holmes let slip I should think it quite possible there were metastases in the bones, and glandular metastases which accounted for his pain. The most likely starting places are the prostate and the kidney. There is no possibility of ruling out either of these places. Even post mortem pathologists are sometimes not sure whether there is malignant disease in the prostate or not.

So my guess would be that he had malignant disease as the cause of death starting in the prostate or the kidney or some other place I cannot think of, which was metastatic in the bones or in the glands so as to produce pressure pain.

DR. MEANS: I do not see any positive statement here about the colon. There was a story, of course, of hemorrhoids in the past. But he had several strongly positive guaiac tests here, and I do not remember that it stated that the stools were bloody. That is to say, it looked as though it might have been blood from somewhere higher up. Wouldn't it be possible to have malignancy of the large bowel which would not show any more than this?

DR. CABOT: I suppose so. I have no distinct remembrance of malignant disease in the large bowel causing death that did not show some obstruction.

DR. MEANS: The man has an underlying arteriosclerosis. That complicates the story a good deal. He gave a story of confusion and loss of memory for a number of years. The vessels and aorta are sclerosed and he has a hypertrophied and dilated heart. It seems to me he has a pretty extensive arteriosclerosis which involves the vessels of his head as well, and superimposed we have a malignant disease with extensive metastases perhaps in the bones. It is possible that he has kidneys which are not functioning properly towards the end; and with that background I should think malignant disease might cause death with a suddenness which it would not in a person who was free from these complicating factors. Dr. Fremont-Smith has raised the question of cerebral hemorrhage here.

DR. CABOT: Unless I was very sure of the man who did that I should not be sure he could tell those old crenated corpuscles from corpuscles introduced at the time of puncture. "Slightly yellowish" means not normal, doesn't it?

AN INTERNE: After the cells settled down it was normal.

DR. CABOT: I am betting against there being anything important in the spinal cord.

DR. YOUNG: Considering malignant disease, why do you rule out the stomach? We have had a case where it was stomach in spite of negative x-ray examination.

DR. CABOT: They are getting wiser about that in the x-ray department, especially in cases where we have reason to suspect that and have looked for it as they did here. I think the chance of their missing a gastric cancer is slight.

DR. YOUNG: I should like to say I think it is not carcinoma of the prostate. Carcinoma starts in the lower lobe where we can feel it usually, or it starts as a degeneration of the adenomatous type, where it would have given some symptoms. So that I believe it would be unusual to have it come from the prostate without any evidence pointing to that. I think kidney is perfectly possible.

DR. CABOT: I am still under the influence of a case we saw at the Brigham Hospital where Dr. Quimby carefully examined the prostate, found nothing whatever, and yet it was cancer of the prostate post mortem.

DR. YOUNG: I have seen one such case. We thought it was not carcinoma because of the degeneration which had softened it and changed the feeling on rectal examination.

DR. CABOT: I do not really think it is any of the lesions I have mentioned, but I have to put down the things that are in my mind. The best I can say, summing up what Dr. Means and I have said, is that we all believe he has arterio-

sclerosis with hypertrophy and dilatation of the heart, with general arteriosclerosis including the kidney and the brain. I do not believe those had anything important to do with his death. Dr. Means is inclined to think they may be a factor without which the amount of malignant disease he had would perhaps not have killed him. He certainly went out of life in a very disconcerting way. He was here only a week, and within that week he was seen by an orthopedic consultant who thought he would be coming back to the Out-Patient Department. Evidently there was consternation and surprise at his sudden exit. That makes us wonder whether there was any vascular complication, because sudden deaths are usually due to vascular complications. But I cannot see that there is anything on which we can erect such a hypothesis. When a man has an anemia which shows that his trouble has been going on for a long time I feel that it takes very little to knock him out. On the basis of that I believe he died of malignant disease. I believe that malignant disease, resting on the evidence given by the x-ray people, probably involved the bones of the pelvis and the glands outside of them so as to exert pressure on the nerves. I think it must be pretty extensive, although all below the waist. Where it started I have only the vaguest guesses, which I have already indicated.

AN INTERNE: He had one-sixth of morphia that night. Do you suppose that could have had anything to do with it?

DR. CABOT: I cannot see how. We have seen so many people in all states of health and disease given one-sixth of morphia without harm that I do not see how we can say it can have had anything to do with it.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cerebral hemorrhage.

#### DR. RICHARD C. CABOT'S DIAGNOSIS

Malignant disease with metastases in the bones of the pelvis and in the glands.  
Arteriosclerosis.  
Hypertrophy and dilatation of the heart.

#### ANATOMICAL DIAGNOSIS

##### 1. Primary fatal lesion

*Causa mortis ignota.*

##### 2. Secondary or terminal lesions

Hemorrhagic edema of the lungs.  
Soft spleen.  
Hyperplasia of the bone marrow.



### 3. Historical landmarks

Chronic pleuritis.

Slightly defective closure of the foramen ovale.

DR. RICHARDSON: The brain and the spinal cord presented no lesions. The bone marrow of the thoracic and lumbar vertebrae was dark brown-red, rather punky, and could be cut rather easily with the bone scissors. Dr. Wright could find nothing that would enable him to say that the case was pernicious anemia, and not enough evidence to state that it was a tumor. The bone marrow of the right femur was more abundant than usual, cut out rather easily and was reddish. There was some hyperplasia of the marrow cells, but no definite evidence of pernicious anemia. The picture outwardly resembled that of pernicious anemia. Of course such evidences are rather slight even in a well defined pernicious anemia case.

There were old pleural adhesions binding down the right lung and the upper half of the left lung. The lungs themselves were negative except that large portions of them showed hemorrhagic edema, an edematous condition not unlike the conditions that come with influenza or streptococcus infections.

DR. CABOT: He was dying of pulmonary tuberculosis at twenty-four. Do you see any evidence of old tuberculosis?

DR. RICHARDSON: None. The bronchial glands were negative. The trachea and bronchi contained much thin frothy bloody fluid like that found in the lungs.

The heart was negative. The coronaries were free, and showed only a little fibrous sclerosis. The aorta and great branches showed only a slight amount of fibrous sclerosis. For his age he had very good vessels.

The liver, spleen and kidneys were rather small but macroscopically and microscopically frankly negative. The spleen was soft.

All we found in this case anatomically was the hyperplasia of the bone marrow and the hemorrhagic edema of the lungs.

DR. CABOT: I hope you will see fit to add to your diagnosis, *causa mortis ignota*. We certainly have not got to the bottom of that case. We do not know what he died of. Dr. Means and I both went as wrong as we could in saying how much arteriosclerosis there was, which was not there at all. But we don't know from this necropsy what that man died of. I have not the least idea that any lesion mentioned was the cause of his death.

A PHYSICIAN: How about a case of early multiple myeloma? I saw such a case at Johns Hopkins in which they made a tentative diagnosis of malignant disease of the prostate which was not borne out at necropsy. But he had myeloma with this atrophy of the bone which was readily

identified at necropsy, but without circumscribed masses.

DR. RICHARDSON: Dr. Wright will not say that that was a marrow tumor.

DR. CABOT: I think this patient might have died of myeloma if he had it. Were there any obvious metastases in that Johns Hopkins case?

A PHYSICIAN: No. Myeloma does not metastasize.

DR. CABOT: I go back to the fact that this man had a lot of pain, which we do not ordinarily get with anemia. He had pain and a lot of secondary anemia.

A PHYSICIAN: The man I saw at Johns Hopkins had a tremendous amount of pain, was under morphia for about two weeks. They thought it was metastasis impinging on a nerve.

DR. RICHARDSON: You do not have metastases, do you, with myeloma?

A PHYSICIAN: No; it is more metastatic infiltration than nodules. The cases ordinarily seen have growths on the spinal column. The vertebrae are hypertrophied and very soft. The man I saw had ribs like egg-shells.

DR. CABOT: You spoke of the thinness of the bone.

DR. RICHARDSON: No. There was hyperplasia of the bone marrow.

DR. CABOT: Would secondary anemia do that?

DR. RICHARDSON: That is a question.

#### EPICRISIS, BY DR. CABOT

Unless this man had taken some toxic substance without our knowledge I believe still that he died of a neoplasm which we have not found. The only other hypothesis is that he had a disease hitherto undescribed—some sort of auto-intoxication perhaps, if infection and neoplasm are ruled out.

#### CASE 10102

An American automobile mechanic of thirty-one entered November 13 for relief of swelling of the ankles and abdomen.

F.H. Good.

*Habits.* For three years previous to 1915 he drank about a "quart of whiskey a day." Since 1916 he had taken no alcohol.

*Occupational history.* For three years he had worked in a dark, damp, cold basement, breathing a good deal of gasoline fumes. He worked most of the time handling "hot lead." He also handled "1400 proof acid."

P.H. From early childhood until he was fourteen he had frequent attacks of "rheumatic fever"—sore, painful, hot and inflamed joints.

He was never in bed more than two or three weeks at a time. From 1912 to 1918 he was in the marines and spent three and a half years in the West Indies, and some time in Georgia and Mexico. He also went to China, but did not land. He had not had malaria. Eight years ago he was thrown from his horse. His testicles were hurt and a gland was removed from the right groin. Occasionally his legs "went to sleep" at night if bent up. He always bled a good deal after a scratch, and if he cut himself in shaving he bled for about an hour.

P. I. Two and a half months before admission after eating apples he became much nauseated and vomited greenish watery fluid. Two months ago while trying to put out a fire he stood in water up to his knees for ten minutes. Next day he had a slight cold in the head, which soon passed off. A few evenings later he noticed that his left ankle was somewhat swollen. The next morning this had passed away. It continued to recur, however. In a few weeks the swelling extended up to his knee and the right ankle was also slightly swollen. The swelling was always relieved somewhat by rest in bed. For ten weeks he had not worked on account of his ankles. During the past two months there had gradually developed intermittent swelling of the ankles followed by swelling of the abdomen. A month ago he noticed that his abdomen seemed larger. It had gradually continued to become uniformly so, with no masses and no pain. About this time his friends remarked that he looked ill, some said jaundiced, others said dusky. At the same time his urine became dark red and continued to be so most of the time. Three weeks ago his face, especially under his eyes, was somewhat swollen one morning. This passed off soon after he was up and about. About this time when he stooped over a little clear fluid ran out of his mouth a number of times during one day. For three weeks he had passed gas by mouth and by rectum. At times his bowels had been slightly constipated and his stools light colored. He had gained twenty-seven pounds in two months.

*Records of the Out-Patient Department* November 9. Examination showed the skin a yellowish tan color, especially the face. Sclerae questionably icteric. Teeth fair. Left pupil greater than right. Heart slightly enlarged. Abdomen tense. Fluid wave. Marked edema of feet and legs to knee. Knee-jerks active. Urine reddish, a slight trace of albumin, very rare red blood corpuscles, bile (?), bilharzia eggs (?)

P. E. Well nourished. Face grayish yellow. Sclerae slightly jaundiced. A papular and pustular rash on the back and chest (oil dermatitis). Teeth poor. Moderate pyorrhea. Heart, lungs, pulses and arteries normal. B.P. 130/80. Abdomen large, tense. Flanks bulging. Shifting dullness. Definite fluid wave. Spleen just felt (?) Genitals. Skin of penis slightly ede-

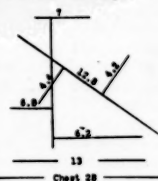
matous. *Extremities.* Pitting edema of legs and ankles. Some varicosities. *Pupils and reflexes* normal.

Until December 9 T. 97°-100.8°, P. 76-112, R. normal; afterwards until operation T. 98°-104.2°, P. 89-142, R. 23-30. *Urine.* Normal amount. Sp. gr. 1.026-1.040. Reddish at five of seven examinations, a slight trace to a very slight trace of albumin at three, bile at six examinations, including a catheter specimen, leucocytes at six, red blood corpuscles at two, much urobilin and urobilinogen at the first. No sugar at twelve tests.

## SCHLAYER TESTS

	Amount		Sp. Gr.		Albumin		NaCl	
	Nov.	Nov.	Nov.	Nov.	Nov.	Nov.	Nov.	Nov.
	25	28	25	28	25	28	25	28
	c.c.	c.c.					gm.	gm.
10 a. m.	40	40	1.028	1.030	0	0		
12	30	30	1.030	1.028	0	S.P.T.		
2 p. m.	40	40	1.030	1.034	0	0		
4	30	20	1.028	1.030	V.S.T.	0		
6	20	40	1.026	1.032	V.S.T.	0		
8	30	10	1.028	1.026	0	0		
Total day	190	170					0.91	0.68
" night	170	190	1.032	1.022	V.S.T.	0	0.68	0.57

*Renal function* 50% (two tests). *Blood.* Hgb. 70%-75%, leucocytes 5,100-14,400, polynuclears 63%-94%, reds 2,800,000-3,500,000, slight achromia at two of four examinations, moderate anisocytosis at one, platelets markedly decreased at one, apparently decreased at another, not seen at a third, reticulated cells 2.0% at one. Three *Wassermanns* strongly positive, one anticomplementary. *Bleeding time* 2 minutes. *Non-protein nitrogen* November 14 31.4 mgm., November 28 30.8 mgm., December 10 33 mgm. *Blood sugar* November 23 89 mgm. *Serum dilution* November 14 1:36, November 15 1:20, November 28 1:30. *X-rays.* No evidence of gallstones. . .



The ascending portion of the aorta appeared to be definitely increased in diameter, suggestive of lues. . . See illustration. Stomach negative. No six hour residue. Duodenum slightly low in position in relation to pyloric end of stomach, but regular in outline, not tender.

Evidence of fluid in abdomen, making visibility poor. Nothing remarkable in cecum. Appendix not seen. Low position of duodenum probably due to enlarged liver. . . *Abdominal taps.* November 14, 5,000 c.c. of yellowish-green clear fluid. No clot. Sp. gr. 1.010. Leucocytes 20%, polynuclears 10%, lymphocytes 70%, large mononuclears 10%, unclassified 10%. The unclassified seemed mostly from the peritoneum. No mitotic figures seen. Red blood corpuscles

500. Wassermann strongly positive. Gold solution 5555542100. Total protein 888. Sugar 0.113. Non-protein nitrogen 27.3 mgm. NaCl 0.54 gm. Calcium 6.2 mgm. Culture negative. November 28. 8,000 c.c. clear amber colored fluid. No clot. Sp. gr. 1.010. Leucocytes 200, polynuclears 42%, lymphocytes 32%, large mononuclears 36%, red blood corpuscles 5,000. Total protein 666. Gold solution 5555544211. Sugar 133 and 126 mgm. Chlorides 0.60 gm. Calcium 7.2 mgm. Non-protein nitrogen 32.4. Wassermann strongly positive. December 8.

strongly positive. Chlorides 0.66 gm. Blood sugar November 23 89 mgm. Lumbar puncture November 23. Fourth lumbar interspace. Much edema over back. Pressures 175, after withdrawal of 8 c.c. 155, after withdrawal of 8 c.c. more 145. Jugular compression 240, rapidly. Cough 40. Cells, 3 lymphocytes. Alcohol and ammonium sulphate positive. Wassermann and gold solution negative. Total protein 22. Sugar tolerance November 28. Fasting 83 mgm. Half an hour after 1.75 gms. of glucose per kilo 167, an hour and a half later



The right sides of the cardiac and supracardiac shadows are made more prominent by the position. There is some enlargement of the root glands, but no evidence of any unusual masses or definite pathology in the lung fields.

9,000 c.c. clear sparkling greenish fluid. No clot. Sp. gr. 1.006. 250 cells. No red blood cells. 96% small round cells (peritoneal?), 5% lymphocytes, 4% endothelial phagocytes (occasionally with cell fragments inside), 1% distended large cells with nuclear debris but no nuclei inside. Of the small round cells a few were lymphocytes, some had two nuclei or multilobed nuclei, definitely not polynuclears but peritoneal dividing or degenerating cells. Total protein 500. Non-protein nitrogen 30.3 mgm. Sugar 134. Gold solution 1111113332. Wassermann

164, three hours later 151. Clotting time December 7 4 minutes, 6 minutes, 6 minutes, with CaCl<sub>2</sub> 3½ minutes. Fair clot retraction at the end of six hours. Hemosiderin test showed several cells containing granules which took the K ferrocyanide stain. Very suggestive of positive test. Urine at two examinations negative to the same test.

Orders. November 13. Low fat diet according to patient's tolerance. Ox gall gr. iv t.i.d. Force fluids. November 17. KI gr. iii t.i.d.

Chloride of mercury tablet\* t.i.d. November 20. Soapsuds enema. Rectal tube. November 22. Increase KI one drop with each dose. November 26. Salt free diet. Limit fluids to 1000 c.c. November 27. Glucose 128 grains in concentrated solution. November 28. KI five drops t.i.d. Chloride of mercury tablet t.i.d. November 29. Increase KI two drops with each dose. Heyden's solution minims 6 daily. November 30. Two slices of salt free bread with each meal. December 2. CaCl 2½ grams 4 i.d. December 3. NaI instead of KI. December 4. NaI 40 drops t.i.d. December 6. Diuretin gr. xv 4 i.d. December 9. Liquids ad lib. today. Ice bag to head. Morphia gr. 1/6 at nine p.m., repeat once if uncomfortable. Caffein sodium salicylate gr. x s.c., repeat in four hours. December 11. Chloral hydrate gr. x. December 12. Five meal gastric diet. Morphia gr. 1/6 s.c. every three hours p.r.n. unless respirations below 14. December 13, 5 i paregoric. Morphia gr. 1/6, later gr. 1/4. December 14. Morphia gr. 1/8, five doses.

Under antiluetic treatment the patient felt somewhat better. December 5 he had marked iodid rash. The sodium iodid and calcium chlorid were discontinued. Heyden's solution was continued. December 9 he looked distinctly worse. He had severe pain in the lower lumbar region after which he said he passed some solid material with his urine. This was not apparent on gross inspection of the specimen. December 11 he was more comfortable. The temperature was normal in the morning. There was considerable leakage of fluid from the paracentesis wound. The abdomen was soft. Next day he had diarrhea and vomiting. The abdominal wound had closed. The lower part of the abdomen was tender. The temperature was 103°. December 13 pus was expressed from the paracentesis wound. The abdomen was slightly tender. The patient felt much better. That evening the abdomen was very tender, with considerable spasm. He had vomiting and diarrhea. The leucocyte count was 19,000, mostly polynuclears.

That day operation was done. The patient went rapidly downhill after it and died December 14.

#### DISCUSSION

BY DR. JOSEPH C. AUB

The hot lead of course would be an etiology for lead poisoning. The gasoline fumes on the whole, I think, except for possible renal irritation, would suggest nothing.

We have here a past history which would suggest the possibility of some tropical disease, of

\*Corrosive chloride of mercury gr. 1/16, extract of licorice root gr. 1; make 100 tablets.

lues, of something possibly indefinite in his blood.

The swelling of the ankles and of the eyelids points to a kidney lesion. The present illness is a history of gradually increasing edema of about twenty-seven pounds in amount,—a great deal. With that is associated a peculiar pigmentation of the skin, a heart only slightly enlarged, and nothing else stated at least in this record except a suggestion of bilharzia eggs. There is a bilharzia which exists in the portal system and one that lives in the bladder, but I should hardly think they would explain the whole picture.

The heart has been said, on physical examination, to be negative. Except for one observation of some edema one morning around the eyes all the fluid has been below the diaphragm. To my mind this suggests an obstruction in the abdomen, probably in the liver, or possibly a nephritis. The specific gravity of the urine is certainly against a chronic nephritis. A gravity of 1040 suggests magnesium sulphate rather than a nephritis.

MISS PAINTER: No magnesium sulphate is mentioned in the orders.

DR. AUB: Then he had a very high specific gravity without it.

The Schlayer tests show a minimal amount of fluid excreted, a specific gravity uniformly high, a small amount of albumin, and a very small amount of salt excretion. The salt test diet contains eight grams, and the amount excreted is about a gram and a half. This means a large salt retention, which can be explained by the accumulating fluid in the abdomen. It does not necessarily mean salt retention due to acute nephritis. The renal function was nearly normal.

There was a secondary anemia compensated for by a considerable amount of new blood formation, indicated by the reticular cells.

The non-protein nitrogen is normal, the blood sugar low normal. Serum dilution 1:36 is high, 1:20 is normal, and 1:30 is high again. In other words he had a slight degree of jaundice.

Perhaps Dr. Merrill will demonstrate these x-ray plates.

DR. MERRILL: The examiner speaks of the apparent increase in the measurements of the ascending aorta, which does not seem so apparent in these plates as we should expect, although Dr. Vance in making the gastro-intestinal examination also notes this prominence, which is very frequently seen in luetic aortitis, although it is not so characteristic of lues as we used to think, since the size of the aorta is also apparently increased in hypertension, and in the lateral view this would also be increased, while the diameter is seen to be perfectly normal in the lateral view.

In a man of this age the most probable thing in our opinion, the suspicion that would arise at first on seeing that prominence just above the base of the heart, is luetic enlargement.



No pathology was found in the gastro-intestinal tract. The position of the duodenum suggested a depression or displacement possibly by enlargement of the liver. The poor visibility of the barium-filled abdominal organs suggests the presence of fluid, which was also suggested by the physical examination.

In speaking of the chest examination there seems to be some discrepancy here in the reports and in the plate as I see it. It does not appear to me that this chest is markedly distorted, and ever since I have seen the picture the question has been in my mind whether we have the correct report for the chest, whether we were looking at this man's chest radiograph when this report was made. I have no doubt that this is the correct plate. It has the correct number on it and the date is right. So perhaps it would be well to disregard a part of this x-ray report. The right side of the cardiac and supracardiac areas seems to be prominent, and in this plate that part of the report is confirmed. Assuming that this is the plate of this man's chest, which it undoubtedly is, it confirms the impression of the slight enlargement of the right side of the aorta and the prominence of the right auricle, although the heart is not abnormal enough either in size or shape to be suggestive. The size is not at all increased. The shadows of the glands are somewhat enlarged and increased in density, but not enough to suggest any gross pathology. There is a shadow in the left lower portion, close to the heart shadow, which suggests an area of increased density within the lung substance for some reason which it is rather difficult to determine. It may be a bronchopneumonia patch or possibly an area of suppuration, that is abscess formation partially concealed behind the heart shadow. It is so indefinite and uncharacteristic in appearance that we cannot say any more than that there is an area of increased density in this portion of the lung. The bronchial markings throughout are somewhat prominent and distinct, and the whole appearance may be simply the result of congestion.

I do not believe on the whole that the x-ray picture is going to give us very much help in the diagnosis. It simply makes us think of the possibility of luetic aortitis and an indefinite increase in the lower portions of the lungs, which may very well be congestive.

Dr. AUB: It also helps to eliminate the heart as the cause of the fluid.

The fluid from the abdominal tap was a transudate with a large number of lymphocytes. The number of cells is not stated. The gold solution test shows a typical paretic curve, certainly a luetic reaction. What it means in abdominal fluid I do not know. The sodium chlorid and calcium are lower than one would find in the blood plasma. On the whole this is a transudate with the crystalloids coming out in approximately the same concentration that one finds in the plasma. At the second tap the gold solution

shows again a paretic curve, the other findings are the same as we get in the blood plasma, and again the Wassermann is strongly positive. The third tap shows approximately the same thing. I should say there was a reaction of irritation with phagocytes appearing in the fluid. Again the sugar is approximately what one would find in the blood. The gold solution has changed. It is not a very striking reaction, but comes at the other end from where it was before. As I said before, I have not the faintest idea what it means in abdominal fluid.

The blood sugar on November 23 is below normal.

Except for the reactions demonstrating increased proteins, the lumbar puncture is negative.

Giving a definite amount of glucose per kilo was suggested by Janney as the fairest tolerance test. This sugar tolerance reaction is suggestive, possibly, of inability to store sugar well. With a normal blood sugar to start with one questions whether that does imply a diabetic tendency. It may also imply liver damage.

The hemosiderin test was done because of the possibility of hemochromatosis. Hemochromatosis I believe is occasionally present where it involves only the liver first and only later involves the pancreas. That is probably why the sugar tolerance was done,—to see whether the pancreas was involved, whether this might be a case of hemochromatosis.

The potassium iodid was undoubtedly given because of the lues. One must not forget that this man may have a kidney involvement, and if he has potassium iodid may be poorly eliminated with toxic symptoms developing. Calcium chlorid was given to cause diuresis and eliminate his fluid; sodium iodid instead of potassium iodid because it would prove less toxic to a person who might have kidney involvement. Iodid rash often occurs when kidneys are involved much more readily than when they are not.

#### DIFFERENTIAL DIAGNOSIS

This man had a presenting symptom of fluid in his abdomen and in his legs, from something which had developed below the diaphragm. He had an alcoholic history, which however had ceased six years before. One has to think primarily, therefore, I should say, with the great amount of fluid in his abdomen, of his liver, and the first thing that comes to mind is cirrhosis either of alcoholic or luetic origin, for both of which he apparently had cause. Hemochromatosis has to be thought of somewhat. Was a piece of skin removed to see whether he did have hemochromatosis or not?

MISS PAINTER: Yes, on the 7th of December.

#### PATHOLOGICAL REPORT DECEMBER 7

Microscopical examination of a small frag-

ment of skin the situation of which is not given shows clusters of small undifferentiated cells in the corium. No deposits of pigment can be found in the epidermis.

H. F. HARTWELL.

#### FURTHER DISCUSSION

DR. AUB: This practically eliminates, I should think, the chances of there being hemochromatosis.

One has to think of tropical disease. I know of none which six years later will give this trouble. I think one also has to think of the kidney as a cause, particularly with the low elimination of salt. This however I think can be explained by the evident rapid accumulation of fluid in the abdomen. Therefore it seems to me that the basis of disease which was causing the abdominal fluid was in the liver, a cirrhosis, alcoholic or luetic in origin. Six years after the last exposure to alcohol would make me think of lues rather than alcohol, because alcohol is not retained and we can hardly think of an effect on the liver after the poison has been excreted. Alcohol may have started the damage and lues continued it.

Now as to the cause of death. Evidently there was pus in the paracentesis wound. I have never seen an infection of the peritoneum due to paracentesis. Yet in this case, pus being obtained from the wound with evident appearances of irritation of the peritoneum, one is forced to think that the patient has a peritonitis. My pre-operative diagnosis would be peritonitis.

#### DR. AUB'S PRE-OPERATIVE DIAGNOSIS

Peritonitis.

#### PRE-OPERATIVE DIAGNOSIS

Streptococcus peritonitis.

#### OPERATION

Under novocain a small midline incision was made in the suprapubic region. There was an area of streptococcus infection necrosis in the peritoneal tissues. Having obtained streptococcus pus from a belly tap in the left flank it was considered justifiable to open the peritoneal cavity through the suprapubic region. This was done with the escape of several quarts of cloudy fluid. A large fenestrated rubber tube was placed in the pelvis and the wound closed about it. The patient experienced considerable relief from the diminishing of the intra-abdominal pressure.

#### FURTHER DISCUSSION

In other words he had a peritonitis following an abdominal tap. I think that was the immedi-

ate cause of death, although apparently he was going downhill quite rapidly prior to that.

Whether his kidneys were involved I do not know. With blood present in the urine, with a very low excretion of salt, I should rather guess that he had a mild nephritis, which is not however the primary feature.

DR. MEANS: He had very little blood in his urine as I understand it; the red color was never explained.

DR. AUB: The record says red blood corpuscles at two examinations. The primary picture I should say is liver.

DR. CABOT: I do not see any evidence of lues. He had some positive Wassermanns, but he had jaundice, and we have been told that we ought not to pay much attention to that in the presence of jaundice. Other than that I do not see that we have anything to indicate it, and I do not see why we should consider the presence of lues.

DR. AUB: He had three strongly positive Wassermanns in the blood and three in the abdominal fluid. The gold solution is suggestive of luetic infection if it is of the same significance as in the spinal fluid.

DR. CABOT: Does a Wassermann have any weight in the presence of jaundice?

DR. AUB: It was strongly positive. This man did not have much jaundice, according to the record, and he had bile in his urine only twice.

MISS PAINTER: He had a great deal in those two examinations.

DR. AUB: At two examinations he had it and at four he had none. The jaundice may well be a factor, however.

A PHYSICIAN: How about Banti's disease?

DR. AUB: It certainly must be considered. I should say. The spleen was not very large. The statement at one observation was that it was barely felt. Dr. Cabot, have you ever seen an alcoholic cirrhosis appearing six years after the stopping of the alcohol?

DR. CABOT: My neighbor tells me that his alcohol habit did not stop.

DR. MEANS: I was under the impression that he had been taking a great deal less, but some.

A PHYSICIAN: I should like to know the significance of the urine. What would cause the reddish color? and just what does urobilinogen mean?

DR. AUB: I should say the reddish color was probably due to the very concentrated urine and the precipitation of urates. The urobilinogen and urobilin imply liver damage probably with some obstruction.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cirrhosis of the liver.

Syphilis.

Operation, drainage of streptococcus peritonitis.

DR. JOSEPH C. AUB'S DIAGNOSIS

Cirrhosis of the liver.  
Syphilis.  
General peritonitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Cirrhosis of liver.

2. *Secondary or terminal lesions*

Septicemia, streptococcus hemolyticus.  
Hypertrophy of spleen.  
Varices of esophagus and bladder.  
General peritonitis.  
Slight icterus.  
Hemorrhagic areas of pleura and pericardium.  
Edema of feet and ankles.

3. *Historical landmarks*

Operation wound.  
Chronic pleuritis.  
Slight arteriosclerosis.

DR. RICHARDSON: We were not permitted to examine the head. The skin generally was sallow, which might be said to be a very slight icterus. The feet and ankles were swollen and pitted on pressure. On the right side of the thorax wall was an ovoid swelling which pitted on pressure. That was an infusion of fluid not absorbed. The subcutaneous tissues in the region of the abdominal wall about the margins of the wound were infiltrated with much thin pus extending along the sheaths of the muscles. There was 300 c.c. of purulent fluid in the peritoneal cavity, and the peritoneum was generally coated with fibrinopurulent material,—a well marked peritonitis. The appendix was negative. The esophagus showed along its mucosa quite well marked varices; curiously enough in the stomach the mucosa was pale and there were no definite varices. They may have bled out. The pylorus was negative. The intestines generally showed that elastic thickening of the walls which makes the intestine feel something like a rubber tube when we pick it up. Of course that means congestion, injection of the vessels. It might be associated with chronic passive congestion, or with cirrhosis of the liver, as it was in this case.

The mesenteric glands were negative. The retroperitoneal glands in the region of the head of the pancreas were a little enlarged and rusty brownish red—which is interesting. In hemochromatosis, in well developed cases, the retroperitoneal glands present this striking rust color. In this case the glands hinted at that. That was the only thing we found at the necropsy that would go with hemochromatosis.

The diaphragm was at the fifth interspace on the right, at the sixth on the left. There were a few c.c. of thin reddish fluid in each pleural cavity and a few old adhesions in the region of the apex on the right and to the pericardium on the left. I found nothing to explain the shadow unless it might be some of the adhesions shooting off to the pericardium.

The trachea and bronchi showed a pale mucosa and were empty. The tissue of the apices of the lungs yielded a moderate amount of thin frothy fluid. In places in the lungs and on the pleura, especially well marked over the diaphragmatic pleura, were smaller and larger hemorrhagic areas associated with the streptococcus septicemia present in this case.

The heart was frankly negative. The aorta showed a slight amount of fibrous sclerosis—nothing of any moment. There was no evidence of syphilis.

The liver weighed 1405 grams,—rather small for him. The capsule was thickened, glassy, and rounded over small nodules of liver tissue, and from the thickened capsule grayish streaks extended into the tissue framing the nodules, producing tough granular section surfaces and giving the typical picture of chronic interstitial hepatitis. There was no evidence of luetic cirrhosis.

The spleen weighed 615 grams,—enlarged as of course it would be with chronic interstitial hepatitis. The lower pole, as an anatomical fact, was at the costal border about in the region of the left mammillary line.

The kidneys were negative. Was there blood in the urine?

DR. AUB: Yes.

DR. RICHARDSON: The mucosa of the bladder in two or three places showed varices. That probably accounts for that.

The heart blood yielded a typical culture of the streptococcus hemolyticus. If there had been no operation wound this would go down as one of the regular things,—the terminal septicemia that is associated with cirrhosis of the liver. It was in these cases that we first began to pay attention here to terminal septicemias. There is of course the other point of view.

CASE 10103

An American paper hanger of fifty-six entered December 15.

F. H. Good, except that one son had fits.

P. H. The only illness of his childhood that he could remember was a long attack of typhoid. For twenty years he had had attacks of pleurisy lasting a week, sometimes once or twice a year, sometimes at an interval of four or five years. Before the last attack, last June, he had been free for twelve years. The attacks began with

very severe sudden sharp non-radiating pain in the right chest just below and to the right of the nipple. The pain persisted for a few days, worse on cough and deep inspiration. He had never been tapped. The last attack lasted two weeks. The year before admission he had some edema in the left leg after "erysipelas."

*Habits.* He smoked a pipe constantly. He rarely drank whiskey.

P. I. In September he began to feel run down, weak and short of breath. He had a dry cough most of the time, but raised a little sputum which was usually white, at times a little bloody. When his stomach was overloaded he vomited on account of nausea and cough. His bowels were usually regular with medicine. He urinated two or three times at night. Lately the urine had been scanty and dark. For the past few weeks the symptoms had been growing more marked. He now felt very weak, and was sent in because he was pulseless. He had heavy dull headache. Every time he coughed the shaking of his abdomen made it tender and painful. Three months ago he weighed 158 pounds. He now weighed 128½.

P. E. "A markedly emaciated old man" showing considerable loss of weight. Over the front of the chest and just above the left knee there were some areas ranging from one to six cm. in diameter with pinkish dry scaly material said to have been there a very long time. Teeth gone. Tongue slightly furrowed and dry. Apex impulse of the heart not felt. Cardiac dullness obscured by lung resonance. Sounds barely audible, not loud enough to be judged. Pulses of small volume and tension. Artery walls thickened and tortuous. Systolic B.P. 90-85. *Lungs.* Front of chest hyperresonant. Normal breath sounds. Slight dullness throughout the backs, quite marked below the midscapular region. Breath sounds very faint at the apices and absent below the midscapular region, where the voice sounds were greatly diminished. No whisper. *Abdomen.* Large, slightly prominent, soft, hanging slightly over at the edges. No marked fluid wave and no shifting dullness made out. No masses. Considerable tenderness throughout, most marked in the left upper quadrant, where there was dullness. *Genitals* normal. *Extremities.* The very slightest possible edema over the shins. A lipoma the size of a lemon on the calf of each leg. *Pupils* slightly irregular, otherwise normal. *Reflexes.* Knee-jerks normal; right slightly less than left. *Plantars* normal.

T. 97° at entrance, afterwards until operation 99.3°-102.1°. Before operation P. 80-105, R. 20-27; urine, 3 9-30, sp. gr. 1.018-1.020, a few leucocytes, a few to rare hyalin casts, some with cells attached: blood, hgb. 90 per cent., leucocytes 6,000-9,800, polynuclears 79 per cent., reds normal; stools negative.

During the day the patient seemed comfortable; but at night he had severe steady pain across the lower abdomen with marked tenderness and some muscle spasm. The mobility of the spine was fair. He fainted while standing for examination of the spine.

He wished to be operated upon for possible relief. December 21 operation was done. He was very uncomfortable after it, with considerable distention and poor general condition. He took little nourishment. December 24 he vomited a good deal of thick greenish mucus. The stomach was washed out with considerable relief. The wound was in rather unhealthy condition, with some serous discharge and poor approximation. The abdomen continued to be moderately distended. The bowels moved well. By December 28 there was no vomiting. From this point in the record there is frequent mention of increasingly poor mental condition.

The night of December 31 the patient got out of bed, and the wound opened up its entire extent. The adherent intestines did not protrude. Next day the general condition was poor and the pulse weak. During the next day he was more comfortable with morphia. There was considerable serous discharge from the wound. Enemata gave good results. He took food poorly. There was considerable nausea, but little vomiting. He failed markedly. The fluid from the wound became thick with pus. January 9 he died.

## DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

For eight years he had had pleurisy very frequently. Dry pleurisy strongly suggests tuberculosis. As to more than that I do not see that we have any right to draw any conclusions from the description.

His sputum was at times a little bloody. There again is the suggestion of tuberculosis, because bloody sputum always raises suspicions of tuberculosis, and in a chronic case such as this generally is pathognomonic.

MISS PAINTER: They specify "no hemoptysis;" merely blood-streaked sputum.

DR. YOUNG: Apparently it is a differentiation which exists in their minds,—a possibility that this blood may have come from some condition in the nasopharynx rather than from the lungs.

Of course this urine means nothing but poor intake to go with poor output.

There is a loss in weight of ten pounds a month for three months.

So far as this history goes it sounds to me a good deal more like a medical than like a surgical thing, with tuberculosis heading the diagnosis list.

The skin condition does not concern us in the



main picture. It may be eczema or I suppose psoriasis.

There are not many things to consider in the left upper quadrant. This dullness should go with a palpable mass. If it does not I think it means very little to us.

It seems to me this is a rather indefinite story on which to base surgical treatment. The definite facts, as I see them, are these: a marked loss of weight coming on very suddenly,—thirty pounds in three months, in a man who has a story that should spell tuberculosis,—dry pleurisy, dry cough, and if there was any blood at all in the sputum I do not see how they can be sure that some of it did not come from the chest; in addition some abdominal symptoms, which are pain, tenderness, muscle spasm; and then a temperature of 99° to 102°, but without leucocytosis, with negative stool. So that it is very hard for me to make a diagnosis, other than a general tuberculous infection with one focus in the abdomen. I think they must have had a better idea about this patient than we can have on reading this history. If they believed that the temperature, tenderness, and spasm of the abdomen were all associated, they have enough there perhaps to go into the abdomen for a possible tuberculous peritonitis. Of course it must be remembered that in a patient as badly run down as this abdominal symptoms, appendicitis perhaps, might exist with very little in the way of localizing symptoms to show for it.

I think we have to say they went into the abdomen for something which they believed was there, which gave them a stronger impression than this history, as I read it, gives me. I do not know what diagnosis to make other than tuberculosis; and in this case I do not see how surgery can help. This was quite a while ago, and we have no x-rays and no other laboratory work to help us out.

#### DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Generalized tuberculosis.

#### PRE-OPERATIVE DIAGNOSIS

Tuberculous peritonitis.

#### OPERATION

Gas and ether. (1) One inch median incision below the umbilicus. The peritoneum was opened with the escape of a moderate amount of clear yellow fluid. The peritoneum was thick. A few scattered miliary tubercles were found on the gut.

(2) McBurney incision in right flank for further exploration. The examining finger found a mass in the region of the pylorus. Median incision enlarged upward and the mass explored. It was found to be omentum curled up about the duodenum. A piece of peritoneum

was removed for pathological examination. Wounds closed tight.

#### PATHOLOGICAL REPORT

A small piece of tissue from the peritoneum, showing upon microscopic examination numerous small rounded foci of small round epithelial cells and giant cells with cheesy degeneration.

Tuberculosis.

W. F. WHITNEY.

#### FURTHER DISCUSSION

Tuberculosis was the thought in their minds, and tuberculous peritonitis the thing that they went in for.

In a young person with a tuberculous peritonitis opening the abdomen and then closing it again will often be enough to relieve the symptoms. The theory is that the irritation of the peritoneum, the change in the blood supply, often does some good, and on that basis puncture of the peritoneum with the introduction of gas has been done, but nothing very satisfactory has been accomplished by it. In a man of fifty-six in as poor general condition as this man it is hard to see that any benefit could come from mere exploration. Apparently he was not benefited.

I do not see how anything else than death could be expected from a man in the condition here described. The interest here as I see it consists in the extent of the tuberculosis as Dr. Richardson will give it to us, and the question whether anything else than tuberculosis is present to make trouble.

#### CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Tuberculous peritonitis.

#### DR. EDWARD L. YOUNG'S DIAGNOSIS

Generalized tuberculosis.

#### ANATOMICAL DIAGNOSIS

##### 1. Primary fatal lesions

Old focus of tuberculosis in the apical portion of the left lung.

Focal tuberculosis of kidney.

Tuberculosis of the mediastinal lymphatic glands.

Diffuse tuberculosis of the peritoneum.

##### 2. Secondary or terminal lesions

Septicemia, streptococcus.

Acute diffuse fibrinopurulent peritonitis.

Dilatation of the right ventricle of the heart.

Operation wounds.

## 3. Historical landmarks

Chronic pleuritis.  
Emphysema of the lungs.  
Cholelithiasis.  
Slight chronic nephritis.  
Slight hypertrophy of the trabeculae of the bladder with small diverticula.  
Small diverticulum of the duodenum.  
Slight lipoma of the jejunum.  
Small papillary adenoma of the kidneys.

DR. RICHARDSON: It will be interesting to see where the tuberculosis is in this man of fifty-six.

We were not permitted to examine the head. Were there any brain symptoms?

DR. YOUNG: No; merely mental symptoms at the end which did not seem to mean anything.

DR. RICHARDSON: The peritoneal cavity contained a large amount of opaque fibrinopurulent fluid,—a well established fibrinopurulent peritonitis. In addition to that the peritoneum generally was studded with tubercles of various sizes and shapes, giving the typical appearance of tuberculous peritonitis.

The retroperitoneal and mesenteric glands were a little enlarged, nothing very definite except in the case of the mesenteric glands; but neither the gross nor the microscopic examination showed any tuberculosis in those glands. Below the diaphragm in short there was a focus of caseous tuberculosis in one kidney; otherwise, except for the peritoneum, no tuberculosis below the diaphragm.

The mediastinal glands and the bronchial glands generally showed tuberculosis, best marked along the trachea and in the mediastinum. The bronchial glands themselves, that is those glands about the bronchi, showed some, but it was not so marked as in the other places.

The right lung showed some edema; no areas of consolidation and no tuberculosis. In the apex of the left lung there was a grayish, slightly punky mass showing fibrous indurated tissue, a little caseous,—in short, a focus in the left apex of chronic tuberculosis. The lung otherwise was all right. So that we have tuberculosis so far only in the glands, bronchial and mediastinal, and an old focus in the apex of the left lung, in the peritoneum, and in the kidney.

The heart weighed 220 grams. Usually we should expect the heart in a man of his age and condition to weigh from 260 to 280 grams. The valves, cavities and coronaries were frankly negative except for slight dilatation of the right cavities, which were not remarkable.

The liver weighed 1545 grams, and of course the peritoneal surfaces were involved in the tuberculous peritonitis. Otherwise the liver was negative.

In the gall-bladder we found one ovoid stone measuring two cm. in length. The spleen

weighed 169 grams and showed the tuberculous peritonitis on its surfaces.

The combined weight of the kidneys was 235 grams. When we remember the size of the heart this is normal for the kidneys. In the kidneys there was the focus of caseous tuberculosis mentioned, as well as a few foci of fibroid atrophy and a little sclerosis of the arteries. At the time this was put down as slight chronic nephritis; it would be better to say foci of fibroid atrophy. There was a very small papillary adenoma in one kidney, not remarkable.

The bladder showed some hypertrophy of the trabeculae and a few shallow diverticula.

There were no tuberculous lesions in the gastro-intestinal tract. The only thing there of note was a diverticulum in the duodenum. Every once in a while we find diverticula in the duodenum. They are usually smooth-walled and seem to make no difference whatsoever, but cases have been reported where they were higher up and produced those conditions which we associate with diverticula, that is diverticulitis. In this situation, however, I have never seen them produce any trouble.

DR. YOUNG: Is that the thing around which the omentum was wrapped?

DR. RICHARDSON: No. It was not wrapped around anything. In tuberculous peritonitis the great omentum rolls up into an elongated roll-shaped mass stretching across just below the stomach. That is what is meant, I presume.

DR. YOUNG: Simply in the way a tuberculous omentum will, and not the product of the diverticulum?

DR. RICHARDSON: Yes. It rolls up on account of the disease. There was a diverticulum in the urinary bladder and some hypertrophy of the trabeculae. That is not uncommon, although there is no particular reason for it from the evidence. Of course there may have been anterior urethral conditions which we were ignorant of.

In the first portion of the jejunum there was a small lipoma hanging from the wall. It caused no definite obstruction.

Culture from the heart blood showed a typical growth of streptococcus, and that was the final thing, a streptococcus septicemia.

## FILTRATABLE BACTERIA

PROFESSOR C. LEVADITI, of the Pasteur Institute, has shown that filtratable germs, e.g., those of smallpox, shingles, sleeping sickness, hydrophobia, and poliomyelitis, have an affinity for special tissues, such as the skin, the tunics of the eye-balls, and the central nervous system, while having no affinity for the blood, the bone-marrow, or the ganglia. In smallpox the skin and tunics of the eyeballs are very susceptible, the brain slightly so, the spinal cord not at all. In poliomyelitis the spinal cord is exceptionally vulnerable, the other structures mentioned being invulnerable.—*The Medical Press.*

## THE BOSTON Medical and Surgical Journal

Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following named committee:

For three years HOMER GAGE, M.D., Chairman.  
EDWARD C. STREETER, M.D.  
EDWARD W. TAYLOR, M.D.

For two years WILLIAM H. ROBERT, JR., M.D.  
ROBERT I. LAM, M.D.

For one year ROBERT B. OSNOD, M.D.  
JAMES S. STONE, M.D.  
HORACE D. ARNOLD, M.D.  
CHARLES FAYENHAM, M.D.

### EDITORIAL STAFF

DAVID L. BRALL, M.D.  
WALTER R. CLAYTON, M.D.

REID HUNT, M.D.

ROBERT W. LOVETT, M.D.

FRANCIS W. FRASSETT, M.D.

JOSEPH F. SUTHERLAND, M.D.

S. BURT WOLBACH, M.D.

GEORGE R. MINOT, M.D.

FRANK E. LAHEY, M.D.

STEPHEN RUSHMORE, M.D.

WALTER F. BOWERS, M.D., Managing Editor

### ASSOCIATE EDITORS

GEORGE C. SMITH, M.D.

WILLIAM B. BROWN, M.D.

JOSEPH GARLAND, M.D.

SUBSCRIPTION TERMS: \$5.00 per year in advance, postage paid for the United States, \$7.50 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the printer with galley proof of paper. Upon written request, authors will be furnished free one hundred eight-page reprints, without covers, or the equivalent in paper in articles of greater length.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 226 Massachusetts Ave., Boston, Mass.

### THE ALLEGED RESPONSIBILITY OF SURGEONS

It is gratifying and encouraging to find intelligent laymen showing interest in the art and science of medicine and concern in the difficulties to be overcome.

The daily papers are running columns of advice regarding questions of health and illness, and magazines are devoting space to many professional problems. The desire of the profession for greater publicity relating to its achievements is being met to a degree. Much that has been written is commendable, but there may be chaff left in the wheat, and perhaps even some poisonous weed in the grist.

The article by William G. Shepherd under the title of "The New Control of Surgeons" raises questions as to the judgment of the author and those who have approved his treatment of the subject. The editor puts the responsibility on "several eminent surgeons of the United States" who have reviewed and approved the article. We would like to know who are these eminent surgeons. We have heard varying degrees of disapproval of the article, and only very faint praise of it.

The opening argument is that there are too many unnecessary surgical operations. The language used is striking and the arraignment definite. The readers are warned that the dan-

ger exists and may strike home. Then fee-splitting is condemned, and although the writer of the article was warned by a surgeon that by his statements the confidence of the public in the benefits of surgery might be lessened, the tendency of the article as written would probably have that effect with some people.

If Mr. Shepherd had said that the dangers existing in unqualified surgical practice and the exploitation of patients by dishonest internists in collusion with surgical rogues was fully recognized by the honorable practitioners, and that every reasonable effort by the professional societies is being made to correct the abuses, and then gone on to explain that the real obstacles to be overcome are to be found in the disinclination of the people to support the efforts of those who would eliminate the unfit, he would have pointed out the danger and the remedy, and shown that the responsibility rests quite as much with the people as with reputable practitioners.

Why does Mr. Shepherd omit to tell us that for many years the leading men in the medical profession have been trying to get the people to employ the most effective preventive measures? It is apparently because his vision is concentrated on the evil practices in the profession rather than on the responsibility of the people at large who are not ready to combat the wrongdoings in the most effective way.

The College of Surgeons and the best hospitals know the problem and they do not need Mr. Shepherd's advice to spur them on. Within their ranks they will purify practice and eliminate the wrongdoer.

Outside of the membership of the College of Surgeons we will continue to find that the graduates of the low-grade commercial school will cut for money and split fees. We shall find fewer commercial and otherwise dishonest doctors among the graduates of Class A schools than we shall among those whose associations are not personally or ethically inspiring.

The questions of better morale and professional standards can be left to the better grade practitioners, if the people will give us adequate regulating laws. One stage of the fight must be to destroy the factory which creates a product which can never measure up to standard. Make low-grade medical education unpopular and leave the reforms to be worked out by the profession and we shall progress faster than can be brought about by adopting the old and worn-out custom of the religious fanatics of long ago who sought to reform through fear rather than by understanding.

### GROSS MISCONDUCT OR — ?

In order to protect the citizens of this Commonwealth against unskillful and fraudulent medical practice a board was created to administer laws providing for registration of physicians and under appropriate circumstances the

revocation or suspension of registration. One important function of this board is to act on complaints which may tend to show "gross misconduct" in the practice of medicine according to the wording of the law, but gross misconduct is not defined in the statute. Other responsibilities relating to the revocation or suspension of registration are specifically set forth in other places in the law, thus relieving the board of the necessity of interpreting the moral or professional quality of the defendant's behavior. For example, if it appears that the defendant has been convicted of a crime in connection with the practice of medicine the board may revoke the registration.

A former Assistant District Attorney, after years of experience in dealing with irregularities in medical practice, felt that many questions outside of technical violation of criminal laws should be decided by a professional board capable of determining the question of whether the physician had met his professional obligations. He drafted and advocated a bill which was enacted by the Legislature. An important function was thereby imposed on a body of men untrained in law, yet endowed with judicial powers.

It is not strange that the board has felt some confusion at times when cases which are devoid of criminal features are brought before it. As an illustration: A doctor intended and attempted to perform the operation of gastro-enterostomy. He made an anastomosis of the stomach and transverse colon; the patient's condition led to appeals for further advice. The condition was discovered by a hospital staff, and an attempt made by the hospital staff to correct the result of the faulty operation. The patient died. The Board of Registration in Medicine was asked to pass judgment on the culpability of the physician who made the error.

It must be recognized that if the board should decide that every demonstrated error committed by a physician ought to lay the practitioner open to the possibility of losing his right to practice, serious injustice might result, for perfectly correct understanding of the problems in every case and absolutely faultless technique is not always attainable by the general surgeon in all of the cases encountered. There is a general belief that the law only requires honesty of purpose and average ability in the practice of medicine, and we may now ask, did this man meet these simple requirements? There is no question of his intention to relieve the conditions found in this case, therefore, dishonesty, as the term is ordinarily used, does not enter into the problem. Then it may be asked, did he exercise average judgment and employ a recognized technique, and if not was there not lack of that moral sense which is an essential element in the equipment of the surgeon? It is conceded that he graduated from a Class A medical school, but at a time prior to the general adoption of many of

the important abdominal operations. At the time when this operation was performed by this man the indications for and the technique of the operation of gastro-enterostomy had become standardized, and every person attempting to make use of this operation might with reason be required to demonstrate average knowledge and surgical skill. We contend that no person may properly attempt any operation which has been advanced beyond the experimental stage without adequate study and experience in association with competent operators, except, of course, when dealing with an emergency attempt to save life.

We further contend that any person attempting to perform a gastro-enterostomy and who unites the stomach to the transverse colon did not demonstrate average surgical ability and, if this reasoning is correct, then we are justified in advancing a step further and argue that since the adequate experience and knowledge was lacking a great injustice was done the patient. The question then intrudes itself, "Was the operator guilty of unprofessional conduct?" We answer "Yes" because we believe that the evidence warrants the belief that if this man had a reasonable sense of responsibility he would not have attempted to do the operation.

There is a moral principle involved in cases of this character. We believe that the Board of Registration in Medicine would have been justified in suspending the registration of this man and thereby throwing the final decision on the Supreme Court, which under the law is given the responsibility of approving or disapproving the action of the board on an appeal from decisions rendered. A court decision would establish a precedent and provide the board with definite knowledge of its powers and limitations in protecting the public, for this is the underlying purpose of the State in creating this board.

#### NEW YORK AND THE QUACKS

THE State Medical Society is backing the Department of Health of New York City in a drive to eliminate the quacks.

According to Augustus S. Downing, New York State Commissioner of Education, there are probably 1500 quacks in New York City; following out the deductions and estimates made by Dr. Downing there are probably 3500 other quacks in the State of New York. As a preliminary move a list of the cults objected to has been drawn up, and practitioners of Christian Science, physical culture or Confucism and psychoanalysis are in the exempted class.

This effort to relieve the people of the dangers and fraud incident to quack practice is commendable, and the procedures inaugurated will be watched with interest. New York has had a particularly strong medical registration law, but if it is true that five thousand quacks practice in



the State it is a demonstration that the regulation of honest medical practice has been sought and that there has been little concern about the activities of the crafty practices of the pretenders.

If a well-qualified doctor applies for registration in New York he must furnish evidence of having graduated from an approved medical school and pass an examination unless he can qualify through reciprocity with a State which has already subjected the applicant to an examination as searching as that employed by New York.

If there are five thousand unregistered quacks, a considerable percentage of illegal medical practice has not engaged the attention of the police departments created to protect the people.

It is strange to find that this indifference has existed and also to learn that the solution of the problem is assumed to lie to a large degree in the re-registration of the physicians of the State at regular intervals. Although this plan will undoubtedly help to separate the sheep from the goats the police powers should have been employed long before subjecting the honest doctor to an annoyance imposed apparently with the purpose of drafting him as a witness through his recurring registration in the sifting process.

If the re-registration is made a revenue-producing measure we will see another example of exploiting the doctor as has been done in the Harrison Narcotic Act.

If the estimates of the proportion of the quacks to regulars in New York are approximately correct, Massachusetts with her weak law is very much better off and her more creditable position is probably due to a good administration of a weak statute.

### THE SUPPRESSION OF RABIES

RECENT references to the biting of human beings by rabid dogs in different parts of the country should lead to the publication of the repeated warnings disseminated by the United States Department of Agriculture concerning the care needed to guard against attacks by animals suffering from the disease. The Department contends that there is no excuse for this danger to life, for suppression is comparatively simple and can be secured by eliminating the rabid dog. The disease has been eradicated in Norway and to a large degree in many other countries. In order to secure this result in this country all of the States in the Union would have to coöperate. The plan suggested is to have all unrestrained dogs effectively muzzled and a rigid inspection and quarantine at borders and ports of entry.

It is estimated that at least 15 per cent. of persons who have been bitten by rabid dogs and not treated will contract the disease.

In the ten-year period from 1910 to 1920 there was an average of sixty-three deaths from rabies

each year, in the registration area. Unfortunately there are some persons who do not believe that rabies exists. There are others who are careless when bitten by a dog and do not take the precaution to have the dog kept under observation or the wound treated.

Every dog that has bitten a person should be carefully watched by a competent veterinary surgeon and his judgment should determine the proper course to pursue. If we are to secure the immunity existing in many other countries the plan, or some modifications of it, advocated by the Department of Agriculture, must be adopted.

### The Massachusetts Medical Society

#### SECTION OF OBSTETRICS AND GYNECOLOGY

CHARLES E. MORGAN, M.D., *Chairman*,

FREDERICK C. IRVING, M.D., *Secretary*,

THOS. R. GORTHALES, M.D., *Clerk*, Boston Lying-In Hospital, Boston, Mass.

(Address all communications to the Clerk.)

Of the cities and towns in Massachusetts the populations of which range from 15,000 to 179,000, the following reported no deaths in the puerperal state during the month of December, 1923: Springfield, Lowell, Brockton, Holyoke, Haverhill, Quincy, Everett, Medford, Brookline, Taunton, Chicopee, Revere, Gloucester, Beverly, North Adams, Northampton, Watertown, Attleboro, Peabody, Arlington, Westfield, Melrose, Framingham, Gardner, Woburn, Newburyport, Greenfield, Winthrop, Methuen, Weymouth, Marlboro.

Four towns under 15,000 reported one death each, in the puerperal state.

Of nine deaths in the puerperal state reported in Boston during the last third of November three were associated with miscarriage.

Whereas until relatively recently pregnancy has been looked upon as a normal condition, we know today that it not only carries a definitely lowered resistance to many conditions which in themselves are serious enough (for example, pneumonia, pyelitis, appendicitis), but also is somehow involved in the causation of various obscure toxemias, of which eclampsia is perhaps the most familiar.

Intelligent women are becoming aware of this fact, and in addition to expecting intelligent prenatal care are usually more than willing to meet such charges as the physician may make for prenatal visits to his office.

The first visit of a pregnant patient to her doctor, therefore, should be considered as the beginning of her prenatal care. At this visit she will often ask if an examination is to be made, and should be told in any case that a thorough physical examination is of prime importance to her immediate welfare. As a matter of routine the physician should take a careful

history of his patient, and should then proceed to examine her methodically, noting the condition of her teeth, throat, thyroid, breasts and nipples, heart, lungs, abdomen, blood-pressure, and urine.

If such a method is followed at the outset abnormalities will be discovered in many cases, which will have important bearing upon the conduct of pregnancy; among these would be hyperthyroidism, valvular disease of the heart, pulmonary tuberculosis, and chronic nephritis with or without hypertension. Inasmuch as caries is more apt to attack teeth during pregnancy than at other times, the patient should be warned to consult a dentist with this in view.

In addition to the general physical examination as above outlined the pelvis should receive especial attention. External measurements can easily be made by anyone who will procure a necessary but inexpensive pelvimeter. They consist of: (1) the intercrural measurements made between the most widely divergent points of the iliac crests; (2) the interspinous, between the outermost points of the anterior superior spines; and (3) the external conjugate, anteroposteriorly from beneath the spine of the last lumbar vertebra to the anterior superior margin of the symphysis pubis.

As the final and most important step of the physical examination comes vaginal exploration of the pelvis. For this purpose the hands of the physician should be always carefully washed, and the examining hand, preferably the left, covered with a freshly boiled rubber glove. In the event that the patient should be unfortunate enough to miscarry or start in labor shortly after examination she would stand a definite chance of becoming infected if the hand which had recently penetrated her vagina had not been covered with sterile rubber.

By vaginal examination alone are we able to detect certain pelvic abnormalities and certain degrees of pelvic contraction, any of which might render the patient's chances of giving birth to a living child practically nil, and many of which might so jeopardize the mother's life and health as to make pelvic delivery at full term inadvisable.

The importance of the pelvic measurements and the details of vaginal examination will be discussed in an early issue of the obstetric column.

—♦♦♦—  
**HIGH STANDARD OF PUBLIC HEALTH IN SCOTLAND.**—Though final figures are not yet available for the year 1923, a preliminary examination of the vital statistics so far known points definitely to the general conclusion that a new standard of public health has been established. It has been estimated that the national death-rate will be less than 13 per 1000, and if so the record figure of 13.6 in 1921 has been reduced.—*Glasgow Medical Journal.*

## Miscellany

### THE PHYSICAL CONDITION OF PERSONS EMPLOYED IN THE RADIIUM SECTION OF THE U. S. BUREAU OF STANDARDS

DR. R. C. WILLIAMS of the U. S. P. H. Service studied the physical condition of persons exposed to radiation in the Bureau of Standards during a period of a year and a half.

These persons were exposed only incidentally while engaged in this Department, and of course were not subject to extensive or long-continued exposures, the chief exposures being in connection with handling the packages containing radium. The conclusions reached are as follows:

1. At least two persons, one an employee at the time of the study and one a former employee, who were examined during this study, presented symptoms showing evidence of the effect of radiation upon the skin of the fingers and hands.

2. Employees are exposed to radiation, as is evidenced by positive effects upon dental films worn by employees in regular routine work.

3. Apparently certain blood changes had occurred in the workers; notably, a tendency in the polymorphonuclear neutrophils to remain slightly below the lower normal limit, and a diminution in the small lymphocytes, while the large lymphocytes apparently ran somewhat higher than normal. The total white cells had a tendency to decrease in number, as also had the total red cells.

4. A low blood pressure, as compared with the usually accepted normal, was noted in practically all the employees of the section.

#### RECOMMENDATIONS

On the basis of this study it is recommended:

1. That blood examinations and blood pressure readings be made at regular intervals on all employees of the radium section.

2. That complete physical examination of all employees of the section be made at regular intervals.

3. That all new employees of the section, before beginning work, be given complete physical examinations, including examination of the blood.

4. That in the handling of radium, all employees of the section utilize to the greatest possible extent all practicable protective devices, such as screens, lead-lined carrier boxes, and handling forceps.

5. That all rooms in which radium is handled be adequately and thoroughly ventilated. The use of electric fans for this purpose appears to be highly desirable.

6. That all employees of the section be warned to reduce to a minimum the amount of unavoidable unprotected exposure to radiation, and not to remain in the vicinity of radium longer than is necessary.

7. That in the packing and unpacking of radium in connection with the receipt and dispatch of shipments, all boxes, wrapping paper, and other equipment be assembled, arranged, and prepared so as to expedite the work and thus reduce the amount of unavoidable exposure to radiation.

8. That all employees of the section be allowed to work only five days a week, and that at least a two-day period intervene between the two holidays of each week, these not to be considered annual or sick leave.

9. That all employees of the section be required to take 30 days' annual leave each year, preferably, whenever at all practicable, in two-week periods at six-month intervals.

10. That the two days' weekly holiday and the thirty days' annual leave be spent outdoors as much as is possible.

### IODINE FOR PROPHYLAXIS OF ENDEMIC GOITER

THE Public Health Reports for January 11, 1924, contain a paper by Robert Oleson, Surgeon U. S. P. H. S., on this subject. His conclusions are as follows:

Summarizing, it may be stated that while numerous methods of supplying iodine for the prevention of endemic goiter have been suggested, the most favored one at the present time is the administration of a chocolate tablet containing 10 milligrams of iodine in the form of an organic acid. One or two of these tablets, according to the age and requirements, should be given each week during the school year both to boys and girls between the ages of 11 and 16. Owing to the presence of thyroid enlargements in children less than 11 years of age, prophylaxis should profitably begin earlier than has ordinarily been recommended. The preventive should be used both in children in whom there is no evidence of thyroid enlargement and in those having such enlargement. In the latter instance, however, the exercise of nominal medical supervision is desirable.

The iodine-chocolate combination or other iodine-containing mixtures may be used advantageously during pregnancy, under the direction of a physician.

While individual oral administration of iodine is the method generally employed, the use of iodized table salt holds forth considerable promise as an efficient means of preventing endemic goiter in a wholesale manner. However, the difficulties of gauging accurately the dosage and of excluding from treatment the hypersusceptible are manifest handicaps to its uncontrolled application.

The wholesale iodization of a municipal water supply may be cited as an ingenious method in need of further appraisal before a definite verdict as to its efficiency can be given.

According to the best information available

there is little, if any, danger in iodine prophylaxis when it is carried out intelligently. Moreover, the rationale of the procedure is sufficiently sound and the results are sufficiently marked to make its extensive application both justifiable and advisable.

### MODERN HEALTH CRUSADE

#### SILVER CUP ANNOUNCEMENT

MISS LOUISA P. LORING, who very kindly gave the silver cup for last year's contest, has offered a second cup to be won in a contest between towns of over 10,000 population. As in the original contest, the cup will be given to the town in which there is the greatest number of Crusaders who finish the fifteen weeks in proportion to the total elementary school population.

#### WHO IS COMPETING?

Towns under 10,000	Towns over 10,000
North Andover	Newburyport
Ashfield	Brookline
Agawam	Amesbury
Orange	Lawrence
Ware	Lynn
Needham	Haverhill
Hadley-Hatfield	Chicopee

#### HELP ATTAIN AN ACCURATE RECORD

Each score card record should be confirmed by the teacher. Please stand firm and perhaps put it to a class vote for any decision on a doubtful or inaccurate record. If each teacher will be responsible for the record in her room, the report form then will be a very simple matter. Whether for the Silver Cup Tournament or for the national pennant we must know: 1. The exact number starting; 2. The exact number finishing, with dates for each.

Finishing means: 15 weeks' work; 54 chores for each of those 15 weeks.—*Bulletin Massachusetts Legion of Modern Health Crusaders.*

### THE PROBABILITY OF DYING OF CANCER

It is very difficult, the Metropolitan Life Insurance Company informs us in its bulletin for December, 1923, to tell whether or not we may be dealing with a rising cancer death-rate. The decline in the death-rates for other diseases, such as tuberculosis, pneumonia, and typhoid fever, has meant an upward trend of the average age of the population so that more and more persons are surviving at the earlier ages and arriving at the ages where cancer death-rates are high. The absolute number of cancer death-rates would therefore increase, even with stationary cancer death-rates at specific age periods. The real risk of dying from cancer, therefore, cannot be determined until the course of mortality from other diseases is considered.

Tables of 1910 and 1921, however, do show that the real risk of dying from cancer increased from 40 to nearly 60 per cent. at various ages for males, and from about 18 to nearly 70 per cent. for females, but the effect of the greater fall in the death-rates from tuberculosis and other preventable diseases among males than among females must be taken into consideration.

#### DR. MURRAY P. HORWOOD IS GIVEN LEAVE OF ABSENCE

Dr. Murray P. Horwood, assistant professor of biology and public health at Massachusetts Institute of Technology, has obtained a leave of absence for three months from that institution to assist the research division of the American Child Health Association in its survey of 86 cities now under way. Dr. Horwood will assume his new duties early in March and has been assigned to cities in the New England States selected for the survey.

In making this survey of 86 cities between 40,000 to 70,000 population the American Child Health Association expects to obtain an authentic status of child health in the United States.

Dr. Horwood has made several public health surveys for private organizations, including the surveys in Taunton and Quincy, Mass.; Glen Ridge, N. J.; Oklahoma City, Tulsa, Muskogee, Bartlesville, Shawnee, Enid, McAlister and Ardmore, Okla., and in Lafayette and Tippecanoe, Ind. He also directed the tuberculosis survey in Philadelphia.

Dr. Horwood received his degrees of bachelor of science and master of arts and doctor of philosophy in public health from Massachusetts Institute of Technology. He served at one time as chemist and bacteriologist for the Brooklyn Sewage Experiment Station. For one year Dr. Horwood taught advanced bacteriology at Wellesley College and was lecturer in bacteriology and immunology at Boston University Medical School. He is now also in charge of the course in hygiene at Tufts Medical College.

Dr. Horwood has published a book, "Public Health Surveys," the only book written treating this subject specifically, and he is also the author of several articles on the subject of public health.

#### REINCORPORATION OF THE MEDICAL WOMEN'S NATIONAL ASSOCIATION

Announcement has been made in the Bulletin of the Medical Women's National Association of the reincorporation of this association under the laws of New York and the dissolution of the Illinois corporation. The president is Kate Campbell Mead, M.D., of Middletown, Conn. The secretary is Jessie Weston Fisher,

M.D., of Middlesex, Conn. The treasurer is L. Rosa H. Gantt, M.D., of Spartanburg, S. C.

The new constitution and by-laws will be published in the April Bulletin.

The object of this organization is to bring medical women into association with each other for their mutual advantage, to encourage social and coöperative relations within and without the profession, and to forward such constructive movements as may be properly endorsed by the medical profession.

#### THE CLASSIFICATION OF QUACKS

THE Department of Health, City of New York, has published a tabulation of the different classes to which the individual quacks in New York State belong. It is an interesting exhibition and demonstrates the resources of human imaginations. It would be interesting to have a definition of the terms. The list is as follows:

"Aero-therapy"	"Leonic" healers
"Astral" healers	Mental and spiritual healing
"Autotherapy"	Medical gymnast
Beautifier establishments	Mechano-therapy
"Biodynamo-chromatic" therapy	"Naturopologist"
"Blood" specialists	"Naturopath"
Bone setters	"Neuro-therapy"
Cancer "cures"	"Naprapath"
"Chromo-therapy"	Optical institutes
"Christos" (blood washers)	Obesity cures
Christian Science	"Psycho-analyst"
"Chromopathy"	Patent medicine men
Couéists	"Photo-therapy"
Diet-therapy	Physical culture
Diatheomy	"Physio-therapy"
"Drugless healers"	"Psycho-therapy"
Electro-therapy	"Practo-therapy"
Electrotonic methods	"Quartz-therapy"
Electric light diagnosis	"Spondylo-therapy"
"Electryonic" methods	"Sani-practor"
"Electro-homeopathy"	"Spectrocrome"
"Electronapro-therapy"	Special food faddists
"Geo-therapy"	Special drug faddists
Hypnotist	"Spectro-therapy"
Hydro-therapy	"Tropho-therapy"
Herballist	"Telathermy"
Helio-therapy	Vacuum and serum "cures"
"Irido-therapy" diagnosticians	"Vitopath"
Kneipp cure	"Zodiac-therapy"
	"Zonet-therapy"

#### AMERICAN SOCIETY FOR THE CONTROL OF CANCER

In a recent bulletin this society outlines the plans of the organization and expresses the belief that the work of dealing with the problems of cancer will have to be conducted by voluntary workers rather than by public health departments.

The experience of the society indicates that an income of at least \$60,000 a year should be available. All charitably disposed persons should remember this organization when making wills and when arranging for donations.



## EXHIBITS AT THE MEETING OF THE NEW ENGLAND DERMATOLOGICAL SOCIETY.

THE following cases were shown at the December meeting of the New England Dermatological Society, held at the Boston City Hospital:

1. Female, 36 years of age; lichen obtusus corneus. Dr. J. S. Bragg.
2. Man, 61 years old; granuloma fungoides. Dr. W. P. Boardman.
3. Girl, 16 years old; dermatitis factitia(?) Dr. W. P. Boardman.
4. Girl, 12 years old; lupus vulgaris(?) Dr. W. P. Boardman.
5. Male, 21 years old; Raynaud's Disease(?) Dr. W. P. Boardman.
6. Male, 26 years of age; rupial secondary syphilis. Dr. W. P. Boardman.

### WHO IS HE?

A man presenting a card with the words "International Board of Health" and in the corner "Represented by J. S. Brown," has appeared before the Massachusetts State Letter Carriers' Association, and after a talk on medical matters in which he advises against some very necessary operations and tells his audience that pain in the back signifies kidney disease, he then tries to sell a book for three dollars. The book is of very little value, for it gives some generally known facts and a number of simple recipes in Latin and English.

Part of his talk has reference to diseases of the sexual organs and it may be that he is subject to the law referring to publicity relating to this subject.

### News Items

**REMOVAL.**—Dr. W. R. Ohler has changed his office from 226 Marlboro Street to 270 Commonwealth Avenue.

**REMOVAL.**—Dr. Jacob Luftig has returned to Boston and has reopened his office at 483 Beacon Street.

**REVOCATION OF REGISTRATION.**—At a meeting of the Board of Registration in Medicine held February 13, the registration, as a practitioner of medicine in this Commonwealth, of Horace G. MacKerrow, of Worcester, who is serving a State Prison sentence, was revoked.

**DISPENSARY OF THE ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS CLOSED.**—The Board of Public Service has refused to renew the permit to operate a dispensary in connection with this college. Dr. Waldo Briggs, dean and owner of the College, threatens to take action to prevent interference with the operation of the dispensary.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending February 23, 1924, the number of deaths reported was 245, against 271 last year, with a rate of 16.45. There were 40 deaths under one year of age. The number of cases of principal reportable diseases were: Diphtheria, 70; scarlet fever, 130; measles, 197; whooping cough, 19; typhoid fever, 2; tuberculosis, 31. Included in the above, were the following cases of non-residents: Diphtheria, 4; scarlet fever, 12; measles, 1; whooping cough, 4; tuberculosis, 8. Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 2; measles, 1; whooping cough, 3; tuberculosis, 12. Included in the above, were the following cases of non-residents: Diphtheria, 2; tuberculosis, 1.

### Obituary

#### SAMUEL JAMES GRUVER, M.D.

DR. SAMUEL JAMES GRUVER, a retired member of the Massachusetts Medical Society, died on the street in Brockton, February 21, 1924, at the age of 75.

He was a graduate of the Medical Department of the University of Pennsylvania in 1869, having a graduation thesis on "Epidemic Cholera."

He settled in Brockton and joined the State society in 1883, his name being placed on the retired list in 1917.

He was the son of John and Sarah (Correll) Gruver, and was born in Lower Mt. Bethel, Northampton County, Penn., August 27, 1846.

He passed through the district schools of his native town and attended Lafayette College, Easton, Penn., after which he entered the Medical Department of the University of Pennsylvania at Philadelphia, and was graduated in the class of 1869.

He began the practice of medicine and surgery in Portland, Penn., immediately after graduating, and soon developed a large and lucrative practice. In 1881 he removed to Brockton, the native place of his wife, and purchased the handsome and extensive Chandler Sprague estate at Salisbury Square.

From his arrival he became a leader in the business affairs of the First Congregational Church, and was for years a member of the parish committee. Although evincing a great interest in municipal affairs he declined to accept office until 1887, when he represented Ward 5 in the Board of Aldermen, and was returned in 1888. He declined a renomination the following year, although strongly urged. He was a Republican and a familiar figure at conventions. He was one of the prime movers in the starting of the East Side Street Railway Company.

Active he was to the very end. When stricken with heart disease on the street, February 21, 1924, he was returning from his daily duties

at the W. L. Douglas Shoe Company medical office, where he had been the physician in charge since the establishment of the department over a score of years ago.

Dr. Gruver was a retired member of the Massachusetts Medical Society and a member of the Brockton Commercial Club, A. F. and A. M., Satucket Royal Arch Chapter, Bay State Commandery, K. T., and Brockton Council, Royal and Select Masters. He was twice married.

Mrs. Gruver was Miss Suzanne C. Beals, daughter of the late Mr. and Mrs. Isaiah A. Beals of Brockton. She is a sister of Dr. Arthur L. Beals. She is a talented musician and well known as an artist and author, having written the manuscript for several pageants, including the production given at Brockton's centennial celebration in 1921. She is a member of the Woman's Club of Brockton, the College Club of Brockton, and other organizations.

#### DEATH NOTICES

DR. BERNARD THOMAS DALY, a retired member of the Massachusetts Medical Society, died at his home in Roxbury, February 26, 1924, at the age of 66. He was a graduate of New York University Medical College in 1882, settling in Roxbury in that year.

DR. JOSEPH AUGUSTUS LANGLOIS, a retired member of the Massachusetts Medical Society, died at his home in Pittsfield, February 22, 1924, aged 70. He was a native of Lotbiniere, P. Q., and a graduate of Laval University, Quebec, in 1879. He practiced his profession in Magog, Quebec, moving to Pittsfield in 1887, where he gave much attention to diseases of children. At one time he was candidate for mayor. A son and four daughters survive him.

DR. FREEMAN LAMPREY LOWELL, who for many years conducted a private dispensary at 2A Milford Street, in the South End of Boston, died, after several years of poor health, at a private hospital in Arlington, February 21, 1924, at the age of fifty-two. The son of Oliver and Clara Stevens Lowell, he was born in Kennebunk, Me., September 23, 1871. After graduation *cum laude* at Harvard College in the Class of 1894, he entered Harvard Medical School and took his M.D. in 1900. Settling in practice in West Somerville he joined the Massachusetts Medical Society in 1901, having been house officer in the Somerville Hospital. He was bacteriologist to the Board of Health and a member of the Somerville Medical Society. About the year 1906 Dr. Lowell moved to Harwich Center, to return to Boston three years later, there to found his dispensary.

He was twice married, first to Romella Gifford, daughter of Benjamin Gifford, M.D., of the Cape, and second, to Lillian Heron of Beverly, who survives him.

#### Correspondence

##### ICHTHYOL AND ICHTHALBIN

Mr. Editor:

In the February 16th number of the *Journal of the American Medical Association* there appears on page 565 the authorized report of the Council on Pharmacy and Chemistry, announcing the omission of Ichthylol and Ichthalbin from "New and Nonofficial Remedies."

The summary and conclusions upon which their action is based is as follows:

The early literature relating to ichthylol, thirty of the most recent papers dealing with its clinical use, and twenty-four letters from dermatologists, gynecologists, internists and others have been examined, and from this study the following conclusions are drawn:

1. Ichthylol, by virtue of its chemical properties, belongs to a class of substances derived from petroleum-like products found in various parts of the world.
2. Ichthylol has no reducing power.
3. Ichthylol does not precipitate the protein of the body cells.
4. Ichthylol is at best of feebly antiseptic action.
5. Ichthylol was recommended for numerous diseases because of a mistaken view of its action, and there is no satisfactory evidence that it has any therapeutic properties other than those of a feeble antiseptic, demulcent, and feeble astringent.
6. It is seldom used except in combination with other agents, and even its warmest advocates are in total disagreement concerning its application.
7. Clinicians often state that they employ it in conditions in which they are unable to determine its value without being at all convinced that it is responsible for any improvement that follows its use.

I cannot stand idly by and see an old and valued therapeutic friend black-balled from the club of pharmaceutical good standing without raising a feeble voice of protest. Of the efficiency of ichthylol and its synthetic imitations in internal medicine and gynecology I have no personal knowledge and no comment to make. But in the field of skin diseases it has a place that no other drug can fill: literature, test tube analyses, and the opinions of twenty-four men to the contrary.

Ichthylol relieves inflammation with its attendant redness, swelling, and pain. Properly applied at the onset of an infection, its action is often specific. The relief from pain which is always gained would alone justify the continuance of its use.

Under conclusion No. 6 it will be noted that "it is seldom used except in combination with other agents." Ichthylol's greatest efficiency is attained when used alone. "Ung. 14," a dram of ichthylol to an ounce of petrolatum, has been on the formulary of the Skin Department of the Massachusetts General Hospital for a generation and is in as much favor today as it was the day it was added. Equal parts of ichthylol and water is another excellent method of application.

In erysipelas, the use of ichthylol ointment at night in conjunction with an alcoholic solution by day will retard the spread of the infection, relieve the pain, and reduce the swelling. The pain from a boil on the back of the neck is eased greatly with the first applications and the size of the coming boil may be diminished considerably. The constant application of an ichthylol ointment to the lower legs of a patient, lying in bed and unable to move the limbs because of the pain from a severe attack of erythema nodosum, will put that person on his feet literally in two to four days. Many a starting nodule of erythema induratum has been aborted and the patient spared a long enduring ulcer. Very recently I have seen two cases of infections of the lymphatics of the arm with cord-like thickening of the affected vessels, redness, swelling, pain, and swelling of the lymph glands, quiet down with nightly applications of ichthylol ointment. These patients were relieved speedily of their pain, suppuration of the glands did not occur, and both were able to continue at their work after the first three days.

In my opinion, properly used in selected cases, ichthylol is an excellent remedy and one that will

continue to hold its place as an effective therapeutic agent.

Yours very truly,

J. HAMPER BLAISDELL, M.D.,

45 Bay State Road, Boston.

#### NEW ENGLAND HEALTH INSTITUTE

Boston, Mass., February 14, 1924.

Mr. Editor:

Replying to your letter of February 12, 1924, I may say that we are just now in the process of getting up the program for the New England Health Institute which comes May 5 to 10, 1924. The final program will take considerable time since there are a large number of speakers to be arranged for.

In general, however, it may be said that the Institute will be divided into thirteen sections under the following headings:

Health Administration	Child Hygiene
Preventable Diseases	Nutrition
Public Health Nursing	Tuberculosis
Foods and Food Control	Sanitation
Industrial Hygiene	Veneral Diseases
Mental Hygiene	Social Work
Health Education	

Each section will have from 5 to 9 lectures. The sessions will begin Monday noon, May 5th, and run to Friday afternoon, May 9th. The morning of May 10th will be devoted to demonstrations and sight-seeing.

The attendance at the Hartford meeting was over 700 and was composed of physicians, health officers, nurses, social workers, and many other people interested in the special phases of public health. This year we are hoping for a registration of at least 1000 and we should be able to get it since we are more nearly in the center of New England than is Hartford, so it should be a matter of less time and expense for representatives from Maine, New Hampshire, Vermont and Rhode Island, to get to Boston than to Hartford.

We are especially anxious to have a representative gathering of physicians and there will be many subjects discussed during the Institute which ought to be of special interest to them. The speakers will come from all over New England and will include in addition a number from national organizations.

We will keep you informed from time to time as to the progress of our plans.

Sincerely yours,

MERRILL CHAMPION, *Chairman,*

Program Committee, New England Health Institute.

#### VACCINATION IN ENGLAND

The letter to the President of the Massachusetts Medical Society reproduced below is of interest at this time:

Hoylake, February 5, 1924.

Dear Dr. Bigelow:

I met you at the State House when the bill on vaccination was before a committee. At that hearing the anti-vaccinationist said England was doing away with vaccination. I am sending you some clippings from the London papers, which might be of some use to you. I shall never lose interest in those questions, because of my dear husband having been taken away with that loathsome disease, smallpox.

Very truly yours,

MARY BIGELOW.

47 Alderely Road, Hoylake, Cheshire, England.

[Note:—English papers report increasing numbers of smallpox patients.]

#### NOTICES

##### CONTRIBUTIONS OF DR. LO GRASSO'S PAPER ON TUBERCULOSIS SOLICITED

The Massachusetts Tuberculosis League desires as many copies of the JOURNAL of February 7, 1924—in which Dr. Lo Grasso's article appeared—as possible. All who have journals that are not kept would confer a favor on the League by forwarding them to 1150 Little Building, Boston, Mass. This article may help in promoting better treatment of this type of tuberculosis.

##### BOSTON CITY HOSPITAL STAFF CLINICAL MEETING

CHEEVER SURGICAL AMPHITHEATRE, FRIDAY, MARCH 7,  
1924, AT 8.15 P. M.

Early and Late Stages of Diseases of the Rectum,  
T. Chittenden Hill.

Open discussion.

Physicians, medical students and nurses invited.

Refreshments.

JOHN J. DOWLING, *Superintendent.*

##### NEW ENGLAND PEDIATRIC SOCIETY

The eighty-fourth meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, March 14, 1924, at 8:15 p. m.

The following papers will be read:

1. Pulmonary Tuberculosis in Childhood, Henry D. Chadwick, M.D., Superintendent of Westfield Sanatorium, Westfield, Mass.
2. The Prevention of Tuberculosis, William P. Buffum, Jr., M.D., Providence, R. I.
3. Heliotherapy, R. Plato Schwartz, M.D., Perryburg, N. Y.

Light refreshments will be served after the meeting.

EDWIN H. PLACE, M.D., *President.*

JOSEPH GARLAND, M.D., *Secretary.*

##### UNITED STATES CIVIL SERVICE EXAMINATION

MEDICAL INTERNE (PSYCHIATRIC), ST. ELIZABETH'S  
HOSPITAL

Applications Will Be Rated as Received Until  
June 30, 1924

The United States Civil Service Commission announces an open competitive examination for medical interne (psychiatric). Vacancies in St. Elizabeth's Hospital, Washington, D. C., at \$1200 a year and maintenance (plus "bonus," see below), and in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

**Bonus.**—Appointees whose services are satisfactory may be allowed the increase granted by Congress of \$20 a month.

**Tenure of Office and Promotion.**—The positions are tenable for one year. During the year a postgraduate course in mental and neurological diagnostic methods is given, a written examination is held, and promotions to the next grade, junior assistant physician, may be made of internes who pass the examination and have completed the probationary period of six months. Beyond this there is regular advancement for employees whose services are satisfactory.

St. Elizabeth's Hospital has over 4000 patients and about 1300 employees to care for. In addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed.

**Citizenship and Sex.**—All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles.

#### NOTICE OF EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Examinations of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following-named places on the dates specified:

At Washington, D. C. .... April 7, 1924  
At Chicago, Illinois ..... April 7, 1924  
At San Francisco, Cal. .... April 7, 1924  
At New Orleans, La. .... April 7, 1924

Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written, and clinical tests, before a board of medical officers, and undergo a physical examination.

Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

#### ACKNOWLEDGMENT OF BOOKS FOR REVIEW

The JOURNAL acknowledges the receipt of the following books for review:

**The Care of the Baby.** J. P. Crozer Griffith. Philadelphia and London: W. B. Saunders Co. Pp. 478. Price \$2.50 net.

**The Medical Department of the United States Army in the World War.** Volume 5. Military Hospitals in the United States. Washington: Government Printing Office. Pp. 857.

**Public Health in the United States.** An Outline with Statistical Data. Harry H. Moore. New York and London: Harper & Bros. Pp. 557. Price \$4.00.

**The Hygiene of Marriage.** Isabel Emslie Hutton. London: William Heinemann, Ltd. Pp. 112. Price \$6.00 net.

**Handbook of Anaesthetics.** J. Stuart Ross. New York: William Wood & Co. Pp. 328. Price \$2.75.

**Pruritus of the Perineum.** Joseph Franklin Montague. New York: Paul B. Hoeber, Inc. Pp. 186. Price \$3.50.

**A Combined Text-book of Obstetrics and Gynecology.** J. M. Munro Kerr, James Haig Ferguson and James Young. New York: William Wood & Co. Pp. 1006. Price \$10.00.

**Neurologic Diagnosis.** Loyal Edward Davis. Philadelphia and London: W. B. Saunders Co. Pp. 173. Price \$2.00.

**American Illustrated Medical Dictionary.** Dorland. Philadelphia and London: W. B. Saunders Co. Pp. 1296. Price \$7.00 and \$8.00.

**Movement in Organic Disease.** Ernest Kingscote. New York: William Wood & Co. Pp. 187. Price \$3.50.

**Operative Surgery.** Warren Stone Bickham. Philadelphia and London: W. B. Saunders Co. Pp. 850. Vols. 1 and 2. Per Vol. \$10.00.

**Surgeon-General of the Public Health Service of the United States.** (Annual Report—1923.) U. S. Public Health Service. Washington: Government Printing Office. Pp. 316. Price \$7.50.

**Industrial Health.** Kober & Hayhurst. Philadelphia: P. Blakiston's Son & Co. Pp. 1184. Price \$15.00.

**International Clinics.** Various Authors. Philadelphia and London: J. B. Lippincott Company. Vol. 4. Pp. 308.

**Modern Methods in Heart Disease.** Francis Heathcote. New York: William Wood & Co. Pp. 199. Price \$2.00.

**The Rockefeller Foundation.** (Annual Report—1923.) The Rockefeller Foundation: 61 Broadway, New York. Pp. 451.

**The Primary Problems of Medical Psychology.** Dr. Ch. De Montet. New York: William Wood & Co. Pp. 142. Price \$2.50.

**Selected Essays on Orthopaedic Surgery.** Newton Melman Shaffer. New York and London: G. P. Putnam's Sons. Pp. 636. Price \$5.00.

**Clinical Memoranda for General Practitioners.** Mex. Theodore Brand and John Robert Keith. New York: William Wood & Co. Pp. 375. Price \$3.00.

#### DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

WEEK ENDING FEBRUARY 23, 1924

Disease	No. of Cases	Disease	No. of Cases
Chicken-pox	235	Pneumonia, lobar	113
Diphtheria	122	Scarlet fever	441
Dog-bite requiring anti-rabic treatment	2	Septic sore throat	2
Encephalitis lethargica	3	Smallpox	1
Epidemic cerebrospinal meningitis	4	Syphilis	35
German measles	25	Suppurative conjunctivitis	19
Gonorrhea	67	Trichinosis	5
Influenza	9	Tuberculosis, pulmonary	109
Measles	790	Tuberculosis, other forms	34
Mumps	238	Typhoid fever	11
Ophthalmia neonatorum	15	Whooping cough	69

#### SOCIETY MEETINGS

##### DISTRICT SOCIETIES

**Bristol South District Medical Society:** The annual meeting will be held in New Bedford, May 1, 1924.  
**East North—**Annual meeting at Lawrence General Hospital, May 7, 1924.

**Essex South District Medical Society:** March 19, 1924—Salmon Hospital.  
May 7, 1924—Annual meeting, Relay House, Nahant, in conjunction with Lynn Medical Fraternity.

**Franklin District:**—Society meets at Greenfield the second Tuesday of March, May, July, September. Annual meeting in May.  
**Hampden District:**—The meetings for the year are as follows: April, 1924, at Springfield; annual meeting.

**Hampshire District Medical Society:** Meetings held bi-monthly, the second Wednesday in the month, at Boyden's Restaurant, Northampton.

**Middlesex South District Medical Society:** March, 1924—Hospital meeting; place not yet determined.  
April, 1924—Annual meeting.

**Norfolk South District:**—Meetings first Thursday of each month at 11:30 a. m., February, March, April and May, at United States Hotel, Boston. The February and May meetings are stated meetings.

**Suffolk District Medical Society:** March 28, 1924—Meeting of the Medical Section, in association with the Boston Association for the Prevention and Relief of Heart Disease, at the Boston Medical Library at 8:15 p. m.

April 30, 1924—Annual meeting to be held at the Boston Medical Library at 8:15 p. m.  
**Worcester District:**—The meetings for the year are as follows: March 15 at City Hospital, Worcester.

April 16—A public meeting.  
May 8—Annual meeting.

##### STATE, INTERSTATE AND NATIONAL SOCIETIES

**Schedule of meetings of the New England Dermatological Society:** Wednesday, April 9, 1924, at 3 p. m., in the Surgical Amphitheatre, Boston City Hospital.